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Annals of Horticulture

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In North America

FOR THE YEAR 1893

A Witness of Passing Events and a Record
of Progress

COMPRISING AN ACCOUNT OF THE HORTICULTURE OF THE
COLUMBIAN EXPOSITION

By
L. H. BAILEY

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PREFACE

It is now five years since this series of annual volumes was undertaken. Its motive has been to preserve the salient movements and events touching horticulture in North America, for, otherwise, there has been no consecutive attempt to make a history of the subject. The rural arts and sciences have failed to place themselves with equal rank alongside other fields of human progress, very largely because they lack permanent and attractive literature. The present volumes cannot expect to supply this want, but it is hoped that they may, in some measure, contribute to it by affording a repository of facts to those who have the skill to make a graceful and useful literature.

The plan of these volumes has been somewhat modified in the present instance because of the great length of the Columbian Exposition history. It has been necessary to greatly reduce Part II, omitting some directories, indexes to current literature, accounts of tools and inventions, obituaries, and the like; but it is expected that these features will be restored in succeeding volumes. It is probable that no other unofficial history of horticulture at the World's Fair will appear, and the importance of this subject to the horticultural development of America, is sufficient excuse for the temporary omission of the customary features of the volumes.

This history of the Exposition has been made with the coöperation, directly or indirectly, of most of those persons who were concerned in the development or maintenance of that great enterprise. The author spent nearly four months at the Exposition for the express purpose of compiling this account. A continued correspondence to *Garden and Forest* has been freely used, by permission, in the final preparation of this history. Mr. Warren H. Manning, connected with Olmsted, Olmsted and Eliot, and one of the judges of ornamental plants at the Exposition, has given me much assistance. The complete list of the hardy plants on exhibition in the grounds of the Fair, was prepared almost wholly by Mr. Manning. I desire here to express my warmest appreciation of the readiness and freedom with which the affairs of the Department of Horticulture were placed at my disposal by its chief, Mr. J. M. Samuels.

L. H. BAILEY.

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PART I.

GENERAL ANNALS.

§1. CROPS AND PRICES, 1893.

The past year was, in general, an unhappy one to the horticulturist. Crops were either light and poor or they brought low prices. The evil results of unpropitious weather were heightened by the serious financial depression which swept over the country in midsummer, and the effects of which are still very apparent in every business. Apples, particularly, were a very light crop. Even in Ontario, where the yield of winter apples is commonly heavy, the yield fell below one-quarter of a full average crop, and in the Mississippi Valley it was smaller still. In most parts of New York the winter apples were less than in 1892. Peaches were a full crop in nearly all parts of the country, and the same may be said of grapes. Pears and plums ran from fair to good. Strawberries were generally a poor or indifferent crop, especially in the Middle and Western States. Raspberries gave average returns, as a whole, but blackberries were severely shortened by drouth. Continued dry weather also shortened the staple field and vegetable crops. The Pacific slope reports average yields in most directions, although apricots were light in California. The citrous crops of California and Florida are large. Heavy production of strawberries and annual crops were stimulated by the approaching Columbian Exposition, but the demand from this source was less active than had been anticipated, and heavy losses resulted; but the lesson has been well learned that temporary markets are rarely profitable ones to the horticulturist.

Climatic Conditions.—Over much of the country the climatic conditions were unpropitious, particularly in dearth of rainfall. The statistician's report, from the Department of Agriculture, shows, during the period of crop growth, a deficiency of rainfall in the principal agricultural districts except the North Pacific coast region, the Ohio Valley, and the Middle Atlantic States. In the Middle Atlantic States there was an excess of rainfall over the normal during the months of April, May, and September, which more than balanced the aggregate deficiency for July and August. In the Ohio Valley and Tennessee the records show a large excess during April and May, while the rainfall during the following months was either normal or below the average. The North Pacific coast region had a very heavy rainfall during April, which continued into May, while for the other months the variations either above or below the normal were slight. The rainfall during June, July and August, the hottest months of the year, was generally below the average, and the damage resulting from this deficiency in many sections of the country was considerable.

Apples.—The apple crop of 1893 was probably the lightest within a generation in the United States. This failure was widespread, although Canada had a fair yield in places. Secretary Knowlton, of the Maine Pomological society, reports: "The apple crop of 1893 is a small one in Maine. The blossom was not heavy, and the worms were never more abundant. Then, in some parts of the State, there were several hail storms, and the disaster of the August rain and wind storm was widespread." The Missouri Valley Horticultural Society, in a discussion upon the apple, reported that "except in a very few localities there would be practically no apples at all in the West. Southern Michiang and Southern Iowa will have a few, but from Kansas only one orchard reports a crop, and a short one at that. In the vicinity of Lee's Summit, Mo., where the horticulturists met, there are 2,500 acres of orchards, which yield an average crop of 100,000 bushels of apples. This year not an apple will be shipped to the East." The great apple regions of New York were probably never so barren. All this is the more remarkable from the fact that the crop of 1892 was also very light.

The Estimated Crops of the two years, as returned by the Department of Agriculture for November, compared with an average crop, are as follows:

	1892	1893		1892	1893
Maine,	83	35	West Virginia,	35	40
New Hampshire,	89	35	Kentucky,	50	30
Vermont,	75	60	Ohio,	25	9
Massachusetts,	75	40	Michigan,	40	35
Rhode Island,	65	46	Indiana,	21	9
Connecticut,	55	50	Illinois,	19	10
New York,	64	41	Wisconsin,	60	48
New Jersey,	58	64	Minnesota,	70	62
Pennsylvania,	55	55	Iowa,	50	30
Delaware,	20	60	Missouri,	28	18
Maryland,	30	77	Kansas,	25	19
Virginia,	36	79	Nebraska,	30	35
North Carolina,	54	67	South Dakota,	—	73
South Carolina,	65	67	Colorado,	70	40
Georgia,	75	56	New Mexico,	85	72
Florida,	—	65	Arizona,	—	50
Alabama,	83	55	Utah,	70	67
Mississippi,	70	56	Nevada,	—	35
Louisiana,	75	67	Idaho,	—	97
Texas,	55	58	Washington,	65	74
Arkansas,	56	59	Oregon,	60	85
Tennessee,	55	64	California,	75	96

Deductions from the Figures.—It will be seen that all the important apple-growing States show a decided falling off, even from the low yields of 1892, but there are slight gains in the Middle Atlantic States and in the Pacific Northwest. The most remarkable estimates in the list are the extremely low yields of the interior belt stretching from Ohio to Kansas, indicating that some influence or condition common to a great area must have been at the bottom of the failure. The cause most commonly assigned for the disastrous failures of apples in recent years is the rapid spread of the scab-fungus early in the season; but while this may be the chief cause, it is evident that other agencies must be concerned in this wholesale devastation. The past few years have been seasons of heavy bloom, but the fruits have failed to set. Orchards which have been persistently sprayed with fungicides during two or three years appear to have given fair crops this year; and there are small areas in Canada, New England and New York which have given fair or even good crops.

Exportation of Apples.—The extent of the apple yield is reflected in the export trade, which has been remarkably light, as the following figures, recording the number of barrels of the crop of 1893 shipped from all American to European ports up to and including December 30, 1893, will show:

	To Liverpool.	To London.	To Glasgow.	To various parts.	Total.
This season..........	63,160	8,754	35,823	3,230	110,967
Last season, to date.	585,168	114,832	192,921	9,723	902,644
Difference	522,008	106,078	157,098	6,493	800,921

The exportations to December 31, for the last three years, for the crops of the respective years, have been as follows:*

1891.	1892.	1893.
1,010,079 bbls.	902,644 bbls.	110,967 bbls.

The Total Apple Exports from 1880, when the business first assumed large proportions, are given in the following table:

Season.	PORTS OF EXPORT.						
	N. Y.	Boston.	Montreal.	Portland.	Halifax	Philadelphia	Annapolis.
1880–81	599,200	510,300	145,276	39,908	24,250	9,872	....
1881–82	75,889	65,093	56,433	6,497	13,805	....	21,535
1882–83	169,570	102,409	64,390	16,890	18,542	3,900	19,893
1883–84	53,048	7,145	7,445	9,811	3,758	325	....
1884–85	256,314	307,130	84,487	71,460	41,207	....	8,612
1885–86	466,203	221,724	68,716	87,301	37,982	186	3,161
1886–87	175,595	303,479	106,713	100,596	94,606	....	26,935
1887–88	275,696	163,916	93,058	25,215	32,652	....	17,884
1888–89	475,337	382,199	291,307	145,825	94,691	860	18,190
1889–90	169,557	132,589	162,526	122,433	53,627	....	37,030
1890–91	76,503	23,123	182,095	80,365	89,199	....	....
1891–92	537,247	339,964	320,427	163,145	87,379	550	....
1892–93	218,037	204,138	429,243	235,395	116,725	....	....

Baltimore, 72; Newport News, 1,337; Norfolk, 215.

Season.	PORTS OF IMPORT.				Total.
	Liverpool	London.	Glasgow.	Various.	
1880–81	839,444	177,935	216,391	95,036	1,328,806
1881–82	133,784	46,147	59,266	55	239,252
1882–83	253,432	46,975	81,269	13,318	395,594
1883–84	46,661	4,843	29,685	343	81,532
1884-85	491,898	123,081	137,641	16,590	769,210
1885–86	537,695	147,102	176,445	24,031	885,273
1886–87	468,553	187,840	138,756	12,775	807,924
1887–88	346,557	104,072	139,517	18,275	608,421
1888–89	790,502	279,374	272,068	65,465	1,407,409
1889–90	418,850	128,248	116,449	14,115	677,762
1890–91	252,548	116,705	80,772	1,260	451,285
1891–92	917,535	224,356	282,553	25,892	1,450,336
1892–93	798,291	174,405	220,790	10,052	1,203,538

Apples in Nova Scotia.—The best apple crop in America this year was in Canada, especially in Nova Scotia, where it was large. The following sketch of the development of the apple industry in that province is given by Attorney General Longley in the *Canadian Magazine:* "The probable acreage in fruit culture in the Annapolis valley in 1860 was about 2,500 acres. Most of these orchards, however, were old and not properly cared for, and were producing in a very limited way and only a few varieties and an inferior quality of fruit. The total acreage at present is estimated at 12,800 acres, with at least 8,000 acres covered with young trees which have not yet begun to bear. The product in barrels in 1860, as nearly as can be estimated, would not exceed 30,000. The product for the year 1893 will be at least 300,000 barrels and is necessarily increasing at a rapid rate each year. As the product began to increase after the formation of the Fruit Growers' Association, the necessity for a market, permanent and unlimited in its scope, was felt. In 1871 the first effort was made to place Nova Scotia apples in the English market. Of course many difficulties had to be overcome. Nova Scotia apples were unknown and the English people could not discriminate between them and Canadian or even American apples. The farmers were not accustomed to packing them in a form that entirely suited the English market. All these things have been met, and to a very great extent overcome, until now there is a large and increasing export. To show the development of this English trade, I may state that the estimated export to Great Britain in 1873 was less than 10,000 barrels; the export last year was over 130,000 barrels. It is estimated that the total export to Great Britain from 1871 to the present year would not be less than 1,400,000 barrels. Formerly the export to the United States was very large. Latterly, however, the competition of American fruit is so keen in the United States that the Nova Scotia producers have scarcely a fair chance, except in certain special lines. Besides, under the McKinley bill, a heavy duty on apples was imposed, which still further interfered with the trade. For the past twenty years, however, it is likely that the total export to the United States has not been less than 400,000 barrels, an average of 20,000 barrels a year. The product during the past twenty years has not been less than two and one-half million barrels, which indicates a considerable local market."

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*It should be said that these figures do not represent the total exportations of the crops of the given years, but only the movements up to the close of the years, at which time the records for the Annals are made up.

The Piedmont Region of Virginia gave a fair to large crop, and its value in Albemarle county alone is estimated at $400,000.

Apples in Europe.—Germany and other parts of continental Europe had a very large crop of apples in 1893, and the yield is reported to have been good in England. The Tasmanian apple trade continues to attract attention in the Covent Garden Market, London.* These apples arrive in spring and come into direct competition with the late consignments of American russets. The continental ports receive little attention from American apple exporters, and the fact that they are nearer to sources of native supplies than the English markets will always discourage heavy trade in that direction; but it is probably true that in years of poor European crops, these continental markets can be opened with profit.

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*For a full discussion of apple-growing in Tasmania, see Annals for 1890, 9; also Annals for 1889, 10; Annals for 1891, 9.

Pears.—The pear crop was about three-fourths of an average yield, the country over, with the heaviest falling off in the interior region where the apple crop was lightest. The November crop statistics give the following figures, as compared with an average full crop:

	1892	1893		1892	1893
Maine,	94	82	Arkansas,	45	60
New Hampshire,	90	81	Tennessee,	50	46
Vermont,	79	63	West Virginia,	42	43
Massachusetts,	75	88	Kentucky,	46	43
Rhode Island,	90	50	Ohio,	56	49
Connecticut,	78	63	Michigan,	75	63
New York,	65	69	Indiana,	50	43
New Jersey,	84	69	Illinois,	40	41
Pennsylvania,	64	71	Wisconsin,	70	33
Delaware,	45	75	Iowa,	—	40
Maryland,	32	72	Missouri,	40	32
Virginia,	35	74	Kansas,	25	26
North Carolina,	51	74	Nebraska,	—	46
South Carolina,	70	77	Colorado,	70	58
Georgia,	70	69	New Mexico,	83	67
Florida,	75	89	Arizona,	—	50
Alabama,	73	61	Utah,	50	74
Mississippi,	65	68	Nevada,	—	35
Louisana,	—	68	Idaho,	—	98
Texas,	61	75	Washington,	80	77
California,	80	95	Oregon,	60	83

Peaches.—There was a good yield of peaches throughout the country, and the Chesapeake peninsula had a very heavy crop, ranking fully up to ninety or one-hundred as compared with a full crop. The peach crop of the country was probably never so well distributed to various markets as during 1893, and while the price was low throughout the season, the returns were generally brisk and, considering the general condition of trade, were satisfactory.

Peaches on the Delaware and Chesapeake Peninsula.—The most prominent peach area of the year was that comprising the Chesapeake peninsula, which had failed of a good crop for several years. The following correspondence from Wilmington, Delaware, under date of September 13, is a graphic description of a busy season:

"The work of harvesting and marketing Delaware's greatest peach crop is nearly finished. The largest and what was considered the wildest estimate ever made on a peach crop has been realized. There is now no doubt that the entire crop will exceed 6,000,000 baskets. It is right to say, however, that this is not all a Delaware peach crop. It has been gathered from Kent and Sussex counties in Delaware, and from the Maryland counties of Kent, Queen Anne's, and Talbot. These are the central counties of the Delaware and Maryland peninsula.

"The distribution of the peach crop this year has included the territory from Richmond, Va., to Toronto, Canada, on the north, and Chicago on the west. Within this district nine cities have taken over a million and a half baskets. Of these cities, New York leads with 600,000 baskets; Philadelphia took about 480,000; Boston 210,000; Wilmington, Del. 120,000; Pittsburg 48,000; Cleveland 36,000; Chester, Pa. 36,000; Buffalo 30,000, and Providence, R. I. 30,000 baskets, making a total of 1,000,000 baskets. The total shipments by rail to points lying within the territory named, to Sept. 5, were 5,773 carloads of 600 baskets each. A total of 3,463,800 baskets have been shipped by water and hauled out of the orchards in traders' wagons. At least another 1,000,000 baskets have been used in the canning establishments, the evaporators, and by the canning of peaches done by private families; nearly 1,000,000 baskets of the fruit have been destroyed by storms that shook it from the trees and made it unmarketable, and by railroad accidents that destroyed thousands of baskets of peaches and allowed other thousands of baskets to spoil because of the stoppage of transportation. So it is that the most conservative estimate makes the total of the peach crop of 1893 more than 6,000,000 baskets. The value of this great crop has been $2,000,000. Perhaps a better estimate would be 35 cents a basket, or $2,100,000 for the 6,000,000 baskets. Out of this sum the growers have not received more than an average profit of 10 cents a basket.

"This great crop is a marvelous result, when it is remembered that a year ago peach growers were lamenting the decay of their orchards, and looking in vain for a cure of the peach yellows—the scourge of the peninsula orchards. Because of the failure of last year's crop thousands of trees were cut down and their stumps pulled out as uselessly cumbering the ground. Although the price received is a small one, the financial results of marketing the crop has made the region of berry patches and orchards prosperous during a financial depression. That the business has been over-developed, so far as the grower is concerned, goes without saying, but the great crop of peaches following a great crop of strawberries, and both crops demanding immediate harvesting and prompt shipment, has given everybody work. Everybody does work in the region of orchards, canneries, and evaporators, and while each person has earned only a small sum, the aggregate of small sums finding their way to the stores and thence to the banks has filled the peninsula bank vaults with money."

Exportation of Peaches.—A trial shipment of peaches was made to England by State Treasurer Burnite of Delaware, Ambassador Bayard being the consignee. Part, at least, of the consignment reached the destination in good order, showing that means may yet be devised to put some of the firmer peaches of the Atlantic coast upon the London market in good dessert condition. The market will undoubtedly be a profitable one, as peaches are rarely grown in the open in England. In fact, peaches have been shipped from California* to England with success, but it is doubtful if it will ever become a profitable trade.

Citrous Fruits.—The citrous fruit crop of 1893–4 is heavy upon both sides of the continent. The orange crop in Florida is estimated at about 4,000,000 boxes. The crop would have been fully 4,500,000 boxes, or perhaps even more, had it not been for the fall storms, which blew a great deal of fruit to the ground and injured other fruit on the trees. For this reason it began the season by carrying badly, and as a consequence prices ruled lower than last year. The gross receipts on this year's crop to the growers, if calculated on an estimate of 4,000,000 boxes, will be about $1,600,000, while the share of the railroad and steamship lines will be fully $2,400,000. Of that amount the transportation lines in Florida alone will receive fully $800,000. At the close of December, 1893, 406,600 boxes of Florida oranges had been received by local dealers in New York city alone. The first California oranges of the 1893 crop reached New York January 19, 1894.

The Louisiana Orange Crop has made a distinct impression upon the market this year. It is even earlier than the Florida crop, the first shipments being made late in September or early in October. The fruit is sweet, and will undoubtedly attract much attention in the future.

Future of the Orange Industry.—The enormous production of oranges in North America has greatly increased the consumption of the fruit amongst the masses of the people, and it can be no longer classed with the luxuries. At the close of 1893, oranges of prime quality were cheaper than first-class dessert apples. The acreage of orange groves has increased enormously within the past few years, particularly in California, and there has been much speculation as to the disposition of the crop when the entire area comes into full bearing. The following consideration of the subject by Horace W. Day, a fruit merchant of New York, in *The Fruit Trade Journal*, has unusual merit:

"Thirty years ago the supplies of oranges for the United States came almost exclusively from the Mediterranean, and sweet Messina oranges filled the popular demand. At that time the entire business was controlled by a few heavy importing houses, among which may be mentioned Chamberlain, Phelps & Co., Lawrence, Giles & Co., Devlin & Rose and James Robinson & Co. of New York, S. S. Scattergood & Co. and Isaac Jeanes & Co. of Philadelphia, Dan'l Draper & Co. and Conant & Co. of Boston, and Dix & Wilkins of Baltimore. The business was done entirely on orders from this side, and indeed these orders were all given in the fall of each season, at which time the sailing vessels for the cargoes of oranges were also chartered; in fact, in September the campaign was arranged for over six months ahead. This method of conducting the business had existed for many years before that time, but about 1865 the actual growers of the oranges in Sicily, who had previously sold all their fruit to the firms who received the orders from the American houses, began to consign the fruit here, and gradually the old importers abandoned their former methods and received the fruit on consignment. Later still, new houses entered the field to secure their share of this profitable business, which I happened to know paid one firm over $30,000 clean commission on their Sicily business alone, during one season. The next move on this checker board some fifteen years later, was the establishment here of the sons and relatives of various prominent shippers of Palermo, and, with the exception of three or four American houses who still hold their own for one reason or another, the entire business from Sicily is now handled by the parties above alluded to.

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*Annals for 1892, 42

European Oranges.—"The receipts of Mediterranean oranges have fallen off materially during the past ten years. In fact, none now come from Spain, and very naturally so, owing to the fact that Florida came to the front about that time, and a few years ago California oranges made their bow to the American public, on this side of the Rocky Mountains. At first the importers of Mediterranean oranges ridiculed the idea that the American markets could ever be taken away from them, but it is certain that hardly any of these gentlemen will now entertain the views they then did, simply because it is a self-evident fact that, with the constantly increasing production of oranges in the great States of Florida and California, reaching this present season, it is expected, between 6,000,000 and 7,000,000 boxes, not counting at all the yield in Louisiana and Arizona—small now, but growing nevertheless—we can do without any oranges from Europe. True, some will come, and they may do fairly well, there being still a certain demand for them in the Atlantic Coast States; however, the handwriting is on the wall and he who runs may read—unless he is a blind man in a business sense.

"It may not be out of the way for me to give some statistics furnished me by the manager of the Fruit Exchange relative to the receipts of boxes of oranges from various ports in the Mediterranean during the past eight seasons. True, over one million boxes came last season owing to the heavy yield in Sicily, but the results were so poor that no such quantity need be looked for another season. The receipts of Mediterranean oranges have been as follows:

Season.	New York.	Boston.	Philadelphia and Baltimore.	New Orleans.	Total Boxes
1884–85.....	825,000	320,000	120,000	40,000	1,305,000
1885–86.....	858,000	204,000	156,000	35,000	1,253,000
1886–87.....	1,207,000	286,000	245,000	60,000	1,798,000
1887–88.....	927,000	216,000	144,000	115,000	1,402,000
1888–89.....	930,000	309,000	138,000	119,000	1,496,000
1890–91.....	756,000	212,000	106,000	26,000	1,100,000
1891–92.....	468,000	140,000	49,000	25,000	682,000
1892–93.....	719,000	150,950	90,000	44,000	1,003,000

Beginnings of the Florida Orange Trade.—"Twenty years ago a few oranges commenced to come here from Florida, and were received mostly by houses not directly in the fruit trade. Some even came to butter, cheese, and other merchants; in fact, Messrs. Walter Carr & Co. received them about 1873, and the managing partner, William H. Sneckner, has assured the writer that he obtained six dollars per box for almost all sent his house for several years, and even then could not supply the demand for this extra fine orange. Ten years ago the dealers in fruit commenced to receive direct from Florida, and soon there were probably one hundred and fifty firms and single merchants receiving this fruit; in fact, it is said that a nicely worded circular and a brass stencil were all that was needed to obtain ample consignments of oranges from Florida. Of course there were some unprincipled receivers who looked after No. 1, just to see that the Florida shipper did not receive any more than he ought to, and in a year or two a great outcry was heard from the South about 'swindling commission merchants' in the Northern cities. It is undoubtedly true that the growers were swindled right and left, so that it is no wonder they looked about for a remedy, and soon after the Florida Fruit Exchange (now the greatest fruit organization in the world) entered the field, and to-day stands at the head. The number of receivers in this city dwindled rapidly, and, actually, to-day those of any prominence here can be counted on the fingers of one's two hands.

"The production increased yearly and soon made itself felt by the importers of foreign oranges, as already mentioned.

Almost every season, however, something has occurred in Florida to prevent a full yield of perfect fruit: A long continued drouth through summer, a plague of red spiders causing the leaves to fall from the tree, heavy rains spoiling the keeping quality of the oranges, and last, but not least, visits from Jack Frost forcing the temperature down to about twenty or twenty-five degrees and naturally ruining much of the fruit on the trees, taking its life, so to speak, and causing it to arrive at its destination puffy, light weight, and devoid of juice. Notwithstanding all these troubles, the crop continues to increase, and authorities in Florida assure me that when all the trees already planted are in full bearing (and most of them are now over four years old, so that it cannot be long before all will be in full bearing), the crop cannot be less than 10,000,000 boxes per annum. True, the same troubles which have occurred in the past may continue in the future; still, we shall probably have a crop of 7,000,000 to 8,000,000 boxes within a few years. About 900,000 boxes arrived in New York last season—about one-fourth of the entire yield.

The California Orange Trade.—"California now steps to the front, and just about the time, or a little before Florida ends, these oranges come in to the Western markets, but very few have as yet found their way east of the Alleghanies. Not 5,000 boxes of California oranges in all were ever sold in New York. The crop in California increases rapidly, and this season it is expected that at least 2,500,000 boxes, possibly more, will be sent out of the Pacific Coast State. The California crop is expected to increase in size, possibly faster than that of Florida, immense groves having been put out during the past five years, and the yield later on will be simply incredible. One of the heaviest growers of California oranges wrote me lately: 'I do not believe you can comprehend the volume of the California business in the near future. I know it is almost beyond the comprehension of those right here on the ground, and I believe within five years we will have 25,000 carloads (over 7,000,000 boxes) of oranges.'

"This fruit up to last season had found ready purchasers f. o. b. in California, in the merchants of the Western cities, but on heavier supplies and a holding back of these orders it is said that a considerable part of last season's crop was actually sent out on consignment. To my mind more must go, although the association of growers, which has just formed the Southern California Fruit Exchange, may succeed in carrying out their desire to sell all f. o. b. at shipping station; still the experience of Sicily twenty years ago, and Florida eight to ten years ago, should certainly show those gentlemen that they cannot sell their crop in this manner when it reaches a certain size, any more than the other two parts of the world could theirs, and for similar reasons.

The Orange Outlook.—"To my mind it is a question of the survival of the fittest. It is not which orange is the finest, but which will sell the best, that all fruit men must consider. Even if the Sicily oranges were as good or sold as well here as those grown in this country, it must be remembered that a duty of 30 cents per box, a freight of 32 cents, as it is to be this coming season, commission and auction charges of say 10 cents, and a cost of 40 cents for the box, paper, nails, packing and shipping, sums up $1.12 per box, without the cost of the oranges being taken into consideration. At less than 50 cents per box in Sicily for the fruit alone, I am confident that growers and shippers cannot possibly send it; so we have a total cost on a moderate calculation of $1.62 per box for the Mediterranean orange, against which the oranges grown in America must compete. The charges on a box of Florida oranges are about as follows: 35 cents for box, paper, nails, packing and carting to shipping station; 15 cents average local freight in Florida to Jacksonville; 35 cents freight to New York (five cents less by one line), and say 10 cents commission, auction charges, etc.; that is 95 cents for all without the fruit. The charges on a box of California oranges are heavy, owing simply to the high freight to New York or Chicago of 87 1-2 cents per box. Add to this 35 cents for the box, etc., and 10 cents commission, gives $1.32½ per box without the fruit. This freight is certain to be reduced, however, because the fruit cannot possibly stand it, and efforts are now being made to secure a reduction to 50 cents per box. It will be some years, in all probability, before any very heavy quantities of these oranges come as far east as this city, although I fully anticipate heavier receipts each succeeding year.

"On the above calculation, allowing duty, freight, etc., as given, it shows the actual expenses on a box of oranges from the tree to the wholesale merchant here to be:

Mediterranean	$1.12 per box.
Florida	0.95 per box.
California	1.32½ per box.

To this must be added the value of the fruit itself. Florida has the great advantage of low freight and no duty, while her fruit sells above the others. It must be remembered, however, that I am figuring the cost in New York for all these oranges, because the freight to the Western cities from Florida is almost double what it is to this city. At present, the Florida orange stands at the head, and with equal quality and condition it will bring more money than any orange grown. Will it continue to do so? Will it improve or will it degenerate? Will California come to the front, or will some other point produce finer fruit in ten or fifteen years from now?"

California Fruits Abroad.—A year ago* a successful experiment was made in exporting pears, plums, and peaches to England. During the past year a similar experiment has been made with oranges, and with similar success. Florida sent about 10,000 boxes of oranges to London towards the close of 1892. California made her first attempt early in 1893, under the general management of the Earl Fruit Company, which assumed the risk of freight and charges on the consignment. The growers of Azusa, Duarte and Covina, Los Angeles County, contributed the fruit, which was the best quality of Washington Navels. The cost of putting a box of oranges in Liverpool was estimated to be $2.50, as follows: Picking, boxes, packing and loading, 50 cents; freight to New York and transfer to steamer, $1; ocean freight, 50 cents; dock charges and commissions, 50 cents. The fruit was worth $2 per box, so that $4.50 must be realized for it in order to make the experiment pay. One car, containing about 290 boxes, comprised the first effort. The fruit left New York on the steamer Teutonic, March 8, 1893, being consigned to L. Connolly & Co., Liverpool. The fruit arrived in excellent condition, and 117 boxes were forwarded to London. The London lot averaged 22 shillings (about $5.30) per box, and that sold in Liverpool brought from 19 to 25½ shillings, or an average of 22 shillings 11 pence. One box sold at 30 shillings, or over $7. At the same time, good Jaffa oranges sold for 11 and 12 shillings. These very high prices were due to the novelty of the fruit and the enterprise, and were considered by dealers to be fictitious. A second consignment of 240 boxes reached England a few days later by the steamer Germanic. The fruit was not in first-class condition, and lower prices were obtained. Forty boxes of Riverside Washington Navels from this lot sold for 13½ shillings, or about $3.30 per box. Other shipments followed, and although the sales were easy, the prices did not reach the figures first obtained and they were not sufficiently high to greatly encourage the traffic at the present expense of transportation.

Beginnings of the California Fruit Trade.—This sketch recalls the interesting history of the development of the California fruit trade in the eastern markets. The following items in this record are made in *Fruit Trade Journal* by N. R. Doe, a New York merchant who has been identified with this trade from the first: "In the year 1867, the experiment of shipping green fruit by express from California was tried with no very flattering results, as the excessive express rates, in conjuction with the fact that the fruit did not arrive in very good condition, made the experiment a losing one on the part of the shippers. In 1868, in the month of November, N. R. Doe, at that time located on Vesey Pier, received one car of grapes and three cars of pears. The grapes consisted of several varieties, but mostly Tokays, and arrived in good condition, selling from $10 to $15 per crate of forty pounds net. These grapes came through by passenger train in a ventilated car, with freight charges of $1,200.

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*See Annals for 1892, 42.

"The pears were Winter Nelis and Easter Buerre, and arrived in very good condition. They realized from $3.50 to 5.00 per box. The pears came by freight train in ventilated cars and were in transit twenty days, freight on same being $600 per car. The result of these shipments afforded sufficient encouragement for shippers to continue with increased consignments, and the following year a total number of twelve cars was received. From this time on shipments increased from year to year until the present year, when over one thousand carloads of this product have been disposed of in New York markets.

Origin of the Auction System.—"Prior to and during 1887 nearly all the California fruit arriving in New York market was disposed of by the firm of Dudley, Clapp & Doe (then located on Vesey Pier) at private sale. In the year 1887 the experiment of disposing of California green fruit at auction* was tried by Messrs. Sgobel & Day, at that time agents for the California Fruit Union, and the result proved favorable. This method received the sanction of both shipper and purchaser as the one manifestly fair method of handling this product, giving the shipper the entire benefit of the market at the time his product is received, together with the advantage of having his goods disposed of promptly on arrival, thus avoiding losses by reason of decay attendant upon the slower method of selling at private sale. This system is also of benefit to the purchaser by affording him the privilege of competition and open market, and giving him the benefit of the opinion of his fellow-buyers as to the quality and value of the fruit exposed for sale. The year 1889 ushered in a venture on the part of the Earl Fruit Co. In May, 1891, Porter Brothers Company of Chicago, well-known and extensive handlers for many years of California green and dried fruits and also Agents for the California Fruit Union in that city, opened extensive and well-appointed stores at No. 211–213 Franklin St., with N. R. Doe as manager of same and were appointed to the agency of the California Fruit Union for the handling and sale of California products by the now popular auction system."

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*For an account of the history of the auction sales system, see Annals for 1892, 40.

Lemons.—The lemon trade has shown remarkable fluctuations within the year. The imports from Sicily for the summer months were very heavy, probably stimulated by the anticipated Columbian Exposition trade. Prices ruled very low. Later on, however, shipments were withheld and the market advanced to very high prices. *Garden and Forest* makes the following comment upon this latter feature of the trade: "Lemons have been remarkably scarce in this [New York] city during the last two months of 1893; the few cargoes which arrived in December were quickly distributed here and in Western cities, and New York dealers have at times been compelled to draw on Boston for supplies. In November, when the Sicily fruit is due here, there were no imports of lemons, against 120,000 boxes received during that month in 1892. The lemon season was unusually backward, and the very low prices obtained last year, together with the alarm on account of cholera, discouraged shipments; importations have been further delayed by unfavorable voyages of the Mediterranean fruit steamers. In January, 1894, a consignment of 17,000 boxes of Messina, Palermo and Catania lemons was sold at auction at high prices. Well-known brands brought from $4.25 to $5.00 a box, while in January, 1893, 'fancy' lemons sold at from $2.25 to $2.75, and those of fair quality realized but $1.75 a box. The sale began with high-grade Messina fruit, but so bare was the market that prices advanced as the sale progressed, and toward the close, Catanias, the lowest grade of lemons, sold for as much as the best Sicily fruit. These high prices were forced by large orders from the West, and in an hour and twenty minutes, lemons to the value of $70,000 were sold." The American lemon crop is annually growing in importance, but it does not yet exercise great influence upon the trade. California lemons have not reached the New York market this year except as samples. Of the Florida crop of 1893, New York received a quantity variously estimated from 25,000 to 50,000 boxes.

Grapes and Raisins.—The Grape crops of 1893 were very heavy. The shipment of the season's raisins from California up to January 1, 1894, amount to 64,000,000 pounds, or over a third more than the output of the previous crop for the same time. At the opening of 1894, it is estimated that from 7,000,000 to 8,000,000 pounds still remain to be shipped from the Pacific coast. Prices have been low.

The yield of grapes, as compared with an average full crop, is estimated as follows in the November statistics of the Department of Agriculture:

	1892.	1893.
Maine,	96	101
New Hampshire,	94	101
Vermont,	93	82
Massachusetts,	90	91
Rhode Island,	88	92
Connecticut,	86	87
New York,	82	99
New Jersey,	85	102
Pennsylvania,	88	94
Delaware,	95	100
Maryland,	80	86
Virginia,	83	79
North Carolina,	83	90
South Carolina,	80	87
Georgia,	91	86
Florida,	90	100
Alabama,	92	72
Mississippi,	75	70
Louisiana,	90	83
Texas,	81	78
Arkansas,	67	70
Tennessee,	65	65
West Virginia,	85	82
Kentucky,	79	70
Ohio,	71	91
Michigan,	88	101
Indiana,	80	93
Illinois,	68	86
Wisconsin,	80	97
Minnesota,	80	92
Iowa,	82	101
Missouri,	71	77
Kansas,	79	70
Nebraska,	82	73
Colorado,	75	62
New Mexico,	90	79
Arizona,	—	75
Utah,	82	91
Nevada,	—	100
Idaho,	—	96
Washington,	95	85
Oregon,	95	83
California,	60	100

On the whole, the yield was considerably above that of 1892, particularly in the three leading grape-growing States, California, New York and Ohio.

The Grape Interests of New York may be divided into three great divisions, the Chautauqua district facing Lake Erie, the interior lake region about Keuka, Seneca and Cayuga lakes, and the Hudson River district. The following sketch of the Chautauqua district, which is the most recent in development of the three, is part of a contribution to the *Country Gentleman* by L. J. Vance: "According to an actual canvass made in March, 1893, there are 17,624 acres of bearing grapevines in the entire belt, and 7,500 acres of non-bearing vines, a total of 25,124 acres. In Chautauqua county alone the vineyards cover 14,600 acres. Thus, the Chautauqua grape belt is, perhaps, the largest single strip of territory devoted to the culture of grapes to be found in the United States. It contains 10,000 more acres of vineyards than the Hudson river district, and about 2,500 more acres than the great Keuka and Seneca lake district. It about equals the area of the greatest grape-growing county of California—Sonoma, which, according to the last census, had 26,500 acres of vineyard land. Next to that comes Los Angeles county with 22,500 acres of bearing and non-bearing vines. So that, if we take the Chautauqua and Lake Erie grape belt as a whole, as it runs from Brocton, New York, to Cleveland, Ohio, it is one of the greatest grape-growing districts in this country, or in the world.

"The usual yield of grapes per acre is from one and a half to two tons. The crop this year is above the average, but not up to the 1892 crop, which was shipped to market in 2,500 cars. This season the best estimates place the crop at 2,000 cars. As each car holds from 2,500 to 2,700 baskets, the reader can form some correct idea of the quantity of grapes produced annually in the belt. Besides, large quantities of grapes are used for home consumption and for wine-making. The crop is distributed about equally between Eastern and Western markets. The growers send table grapes to cities as far west as Omaha and Denver, and as far east as New York and Boston. The industry represents a capital of $10,000,000, and gives employment to 15,000 people the year round. There have been seasons when Chautauqua growers picked over four tons of Concords to the acre. The market price of grapes of late years has been from 2 to 2½ cents per pound, or from $40 to $50 per ton. It is these facts and figures that have induced so many people to go into raising grapes. The rage of grape-growing has spread with great rapidity in the Chautauqua belt. The 'boom' began about ten years ago, and has continued down to the present day. There has been a demand for 'grape land,' and, at the present time, the price ranges from $100 to $200 per acre without a vine on the soil. The vineyards extend from a few acres up to 100. Almost every person owning a farm has some vines. Farmers who do not make a specialty of grapes have vineyards of five or ten acres. Those who make a business of grape-growing maintain from 20 to 30 acres. They expect to clear from $1,400 to $1,500 a year. Then there are some growers who have 50 acres of vineyard, and a few persons whose vineyards will reach 75 acres.

"*The Shipping Season in the Chautauqua District* begins about the first week in September, and lasts till the middle of November. After that, only the late varieties, as Catawbas and Niagaras, are shipped to market in small lots. The season is a busy one while it lasts. When the grape picking and packing is at hand, there is a great demand for workers. It is often difficult to secure competent help. The majority of the workers are women, who become quite expert in their way. The crop is picked in crates which hold from thirty to forty pounds each. The crates are gathered several times during the day, and taken to the packing-house, where girls pack the luscious clusters in the five and ten-pound baskets that we see in our markets. The usual rate of wages is one dollar a day without board, or three dollars a week with board. In some localities payments are based on the number of baskets, the rate being one cent a basket for picking and the same rate for packing. There can be no uniform wages throughout the belt, because of the difference between one vineyard and another, and on account of the variation in the quality of grapes. The bulk of the crop is handled by the Chautauqua and Northeast Grape Union, which markets the fruit of the members on a pooling or co-operative plan. It is the outcome of a vast deal of experience in marketing fruit. In the early days of the grape industry, the growers found that the excessive profits of commission men should be saved. Later on, the growers also found that the only way to receive good prices was to ship first-class fruit. Several associations were formed in different localities to accomplish these ends, but, owing to their lack of proper support, they made little headway. Two years ago, the local unions were combined into one strong body, known as the Chautauqua and Northeast Grape Union, with headquarters at Brocton. This union is a representative body of growers from different sections of the belt. Besides the usual offices of president and secretary, the two important officers are general salesman and general inspector. The former official employs traveling salesmen to canvas the various grape markets, while the chief inspector appoints sub-inspectors to examine the fruit of the shippers. Without going into details, we may say that the laws of the union are such that the crop of the belt is controlled, and that few growers, or none, can ship inferior fruit without being found out. The stamp of the union is a guarantee of the quality of the grapes."

American Grapes Abroad.—In 1892,* a large consignment of Chautauqua Concords was shipped to England with encouraging results. The past season, two carloads were exported, but the fruit arrived in such poor condition that some of it was seized by the health authorities of London, and some of the sales did not cover the cost of freight and charges.

Spraying European Grapes.—Each year witnesses a further popularizing of the copper sprays for combating the diseases of the grape. In the grape districts of New York and Ohio, the practice of spraying has now come to be one of the established operations of the vineyard. It is also drawing attention to the possibility of growing some of the varieties of *Vitis vinifera*, as Black Hamburg, in the open air in the East, by keeping the diseases, to which they are particularly subject, within control.†

Strawberries.—The strawberry crop was light in the upper Mississippi valley, but Louisiana and adjacent regions report a good yield. In the East, the yields were variable, but do not appear to have been large over any great extent of territory. Probably no fruit is more influenced by local features of situation and climate than the strawberry, and it is usually unsafe to make any general statement as to yields. The *Fruit Grower's Journal* makes the following comment upon the crop at Cobden, Illinois: "A hundred and twenty-five carloads of strawberries at this place last year, if recollection is not at fault, have dwindled down to less than twenty-five carloads this year. A shrinkage of a hundred carloads in one year at one place is something unheard of before since strawberries were grown in the West. The setting of new beds has been light throughout the West, with the exception of a very few sections. It is pretty safe to predict that the general crop of strawberries in the Mississippi valley, both north and south, will be a comparatively small one next year, regardless of whether the season is favorable or otherwise. It seems safe to say that the acreage to be harvested from next season in ten or twelve Western and Southern States will not be over sixty per cent. of the acreage three years ago. The low prices for berries that have prevailed for a few years past have had the effect of discouraging growers, and many have gone out of the business, others have materially reduced their acreage, and all, or nearly all, have given less attention to cultivation. With the prospect for a small crop and good prices next year, the best possible cultivation ought to be the rule this year."

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*Annals for 1892, 20.

†See Annals for 1892, 20; *Garden and Forest*, v. 618, and vi. 68.

Cranberries.—The cranberry crop has been large, as the following comparative figures will show:

	Bu. 1890.	Bu. 1891.	Bu. 1892.	Bu. 1893.
New England...	374,000	480,000	375,000	425,000
New Jersey	150,000	244,000	160,000	275,000
Wisconsin, etc..	275,000	40,000	65,000	100,000
Total.........	799,000	764,000	600,000	800,000

The Cranberry Abroad.—One of the most noteworthy fruit enterprises of recent years is the successful attempt to popularize the cranberry in the English markets, the preliminary arrangements for which were fully discussed in the previous volume.* In co-operation with the Fruit Growers' Trade Company, an organization chartered under the laws of New Jersey, the cranberry growers of the East entered upon a campaign of education of fruit consumers in England. Some 300,000 bushels of fruit were pledged to the enterprise in case it should be needed, and A. J. Rider, of Trenton, N. J., Secretary of the American Cranberry Growers' Association, was sent to England this year. By energy and tact he succeeded in interesting hotels and other large consumers of Great Britain in the fruit, and at once opened a considerable market for it. It will now be a comparatively simple matter to develop the foreign trade. If the same methods which were used so effectively abroad by Mr. Rider were inaugurated in our own country, a great increase in the home demand would certainly follow.*

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* Annals for 1892, 28.

Imports and Exports of Fruit.—The following are official figures of the imports and exports of fruits during the year 1893, with comparisons with the previous year:

IMPORTS.

Free of Duty.	1892	1893.
Bananas................	$5,044,579	$5,386,029
Cocoanuts.............	833,285	859,610
Currants..............	1,092,218	877,622
Dates..................	558,755	394,255
All other fruits........	2,166,600	1,932,158
	$9,695,437	$9,449,674

Dutiable.	1892.	1893.
Figs....................	$575,453	$378,238
Lemons................	4,831,334	4,680,353
Oranges................	1,227,311	1,634,184
Plums and Prunes.....	951,444	756,247
Raisins.................	1,218,515	668,461
Preserved Fruits......	855,220	596,300
All other fruits........	1,092,668	1,215,291
Almonds...............	873,521	807,640
All other nuts.........	889,414	734,416
	$12,514,880	$11,471,130

EXPORTS OF DOMESTIC FRUITS.

	1892.	1893.
Apples, dried..........	$835,953	$324,203
green or ripe.......	1,709,356	440,874
(Crops of 1892-3 in part)		
Fruits preserved		
Canned	1,262,834	701.149
Other	252,621	202,073
All other green, ripe or dried fruits.......	841,792	941,077
Nuts	78,387	92,149
	$4,980,943	$2,701,525

The Banana.—The most striking feature of our fruit importations is the great quantity of bananas which now arrive. Probably no foreign fruit has popularized itself so rapidly in this country as the banana. "We find that bananas were first imported into the United States in 1804, by Captain John N. Chester, of the schooner Reynard, and consisted of about 30 bunches. After that year an occasional small lot would arrive here, until the spring of 1830, when the schooner

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*For an interesting sketch of Mr. Rider's mission, see Proceedings of the 24th Meeting Amer. Cranberry Growers' Assoc. 6.

Harriet Smith was chartered by John Pearsall of the firm of J. & T. Pearsall, to transport to this city the first cargo of bananas, which consisted of 1,500 bunches. About two or three cargoes per year were landed after this for over twenty years. About the year 1857, William C. Bliss entered the banana importing business, having his vessels go from Baracoa to Boston. Mr. Bliss imported bananas from Baracoa until about the year 1868, at which time he was forced to look for another source of supply. In 1869 he sent a small vessel to the Island of Jamaica and secured a light cargo of bananas at Port Antonio, leaving an agent there to encourage the natives to grow this fruit. In 1870 Mr. Bliss obtained three cargoes, and in 1871 five cargoes, and in addition to the five cargoes sent to Boston, one was ordered by him to New Orleans and another to Philadelphia."* The number of bunches imported into the United States for the past five years is as follows:

	1889.	1890.	1891.	1892.	1893. For the 11 mos. ending Dec. 1.	Total.
New York	3,642,076	4,758,289	3,567,768	3,715,625	3,720,014	19,403,772
New Orleans	2,946,058	3,668,462	3,744,841	4,484,751	4,744,278	19,618,390
Philadelphia	852,160	1,518,865	1,019,234	1,818,328	1,740,135	6,948,722
Boston	1,292,946	1,602,031	1,840,519	1,710,005	1,693,559	8,139,060
Baltimore	358,294	628,905	609,668	625,077	1,069,438	3,291,382
Savannah		75,000	73,209	190,000		338,209
Mobile			130,000	150,000		280,000
Montreal				30,019	43,000	73,019
Tampa		317,798	48,000			365,798
Galveston		40,000	92,515	3,000		135,515
Norfolk					76,716	76,716
Total No. Bunches imported each yr.	9,091,534	12,609,350	11,125,754	12,726,805	12,817,140	58,370,583

The New Orleans Fruit Market.—It will be seen that New Orleans is still the largest port of entry for bananas. The following sketch is from the New Orleans *Picayune*: "The Custom House statistics show 5,098,526 bunches of bananas, worth $1,473,803, and 5,602,980 cocoanuts, worth $86,027, imported during 1893. The statistics for 1892 are: Bunches of bananas 4,564,025, worth $1,345,236 and 6,419,697 cocoanuts, worth $97,272. These figures are interesting because there has been some discussion of late over our tropical fruit trade, and an idea prevails that we are in danger of losing it. It will be seen that there was no loss in 1893 as compared with the previous year—none at least in bananas, which is the largest item of importation. There was an increase in the quantity of bananas imported of 11 per cent. and in value of 9 per cent. If, however, the figures are studied more closely the returns are not altogether satisfactory. For a number of years past the tropical fruit trade of this port has been increasing very rapidly. There was an increase in 1893, it is true, but it was not nearly as great as in previous years. If we take the fall and winter months, there is an actual decrease as compared with 1892, the imports for the last five months of the year being 1893, $439,203; 1892, 449,763. We began the present year most brilliantly, but the fruit trade has not kept up to what it promised. It will be well for those who think there is no danger of New Orleans losing this trade, and that the high port charges do not tell against this city, to take these facts and figures into consideration."

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* *Fruit-Trade Journal*, x. No. 9, p. 20 (Dec. 23 and 30, 1893).

Potatoes.—"The November returns of the Department of Agriculture relative to potatoes give the estimated average yield per acre, in bushels, and the quality of the product on a basis of 100 as a standard. The yield per acre as averaged for the whole country is 72.2 bushels. This is 7.8 bushels less than the average for a ten-year period ending 1889, about 20 bushels less than in the large crop year, 1891, and 10 bushels greater than the product last year. Strong evidence substantiating the correctness of the returns, and the closeness with which the reports of condition indicate final yield, is again afforded in the consolidated reports of our country correspondents for the present month. In 1891 the October condition was 91.3, and the estimated average yield per acre, returned in November, 93.9; in 1892, October condition 67.7, and yield 62 bushels; in the present year, October condition 71.2, and yield 72.2 bushels, a remarkable parallel fluctuation. The general quality is shown to be good, and though the dry weather tended to reduce their size, the tubers are generally sound and mealy. The percentage of quality stands at 89. In New England the yield is reported good, and the quality excellent, with but little if any rot, except in the States of Vermont and Connecticut. Rot appears to be prevalent in sections throughout New York, and complaints of this trouble have been received from Kentucky, Arkansas, and Missouri. The Southern States were particularly fortunate in the early crop of potatoes, but late planted suffered severely from the drouth, and the same is true in a few sections of the West, but there, generally, both early and late varieties were much reduced in yield. Many counties in the central West report importations of potatoes for consumption, from more favored localities. The mountain States report good crops, especially where irrigation was used. The Pacific States have an average crop of good quality."

Sweet Potatoes.—The sweet potato crop was rather below that of 1892:

	1892.	1893.
New Jersey	100	89
Pennsylvania	90	88
Delaware	85	—

	1892.	1893.		1892.	1893.
Maryland,	80	—	West Virginia,	85	80
Virginia,	86	90	Kentucky,	76	82
North Carolina,	95	92	Ohio,	90	67
South Carolina,	80	91	Indiana,	87	68
Georgia,	89	93	Illinois,	92	71
Florida,	85	96	Iowa,	82	80
Alabama,	89	81	Missouri,	90	85
Mississippi,	78	91	Kansas,	84	66
Louisiana,	95	87	Nebraska,	70	62
Texas,	86	57	Colorado,	110	90
Arkansas,	97	83	Washington,	110	—
Tennessee,	80	82	California,	115	98

Tomatoes.—The Tomato crop as shown in the canned product, was large, especially in the West. In many parts of the East the severe drouths of midsummer shortened the crop, often seriously. The *American Grocer* makes the following comment upon the tomato output: "Although drouth and other adverse climatic conditions reduced the crop in some sections, the tomato pack turns out to be the heaviest ever recorded, being 32 per cent. larger than that of last year, which was about equal to the average during the last seven years. It reached the grand total of 4,456,443 cases of 2 dozens each, against 3,366,792 cases in 1892, and 3,405,365 cases two years ago. This large output is undoubtedly the result of the sharp advance in prices of canned tomatoes during the first half of 1893, culminating in July, when No. 3 standard grade tomatoes sold from $1.25 to $1.45, as against $1 to $1.15 in January. This rise was due to the fact that stocks were exhausted at the beginning of the packing season, as importations from England and Canada were necessary in order to satisfy the demand. The situation established a premium on tomato packing, so that every kettle within reach was put in operation. The acreage in some sections, particularly in the West, was increased nearly 50 per cent." The following table shows, approximately, the pack of 1893 as compared with that of 1892 in cases of 2 dozen each:

NOTE.—An excellent sketch of the truck-gardening industries of the United States, by Maurice L. de Vilmorin, will be found in *Journal de L'Agriculture*, Paris, for Jan. 6, 13, 20 and 27, 1894.

	1893.	1892.
New Jersey....	977,242	862,692
Maryland	1,417,626	977,742
Indiana	347,260	282,717
California	451,547	230,943
Delaware	271,277	175,700
New York	160,887	146,290
Virginia, including West Virginia, 2,000	45,020	60,386
Iowa	82,719	57,500
Ohio..........	64,720	87,840
Missouri	122,493	64,621
Michigan	30,502	39,602
Illinois	64,400	42,200
Kansas.........	76,815	30,833
Utah	29,000	55,000
Nebraska	16,900	2,210
Pennsylvania .	24,364	18,950
Connecticut ...	9,500	14,750
Colorado	49,500	39,262

	1893.	1892.
Massachusetts .	3,400	6,557
Kentucky	6,500	2,200
Arkansas.......	14,000	2,500
Texas	7,521	100
North Carolina.	7,350	1,500
South Carolina.	2,950	7,500
Alabama	2,200	1,170
Georgia.........	4,700	12,400
Minnesota......	2,000	....
Wisconsin.....	3,250	....
Mississippi.....	2,300	....
Oklahoma Ter..	2,500	....
Total U. S	4,300,443	3,223,165
Canada	156,000	143,627
Total U. S. and Canada......	4,456,443	3,366,792

"This estimate shows that the excess in the tomato pack of the United States for 1893 over that of last year is 33 per cent.; the excess in Canada is eight per cent., and for both countries it is 32 per cent."

The pack of the last eight years has been, approximately, the following:

1886.	2,363,760	cases	tomatoes
1887.	2,817,048	"	"
1888.	3,343,137	"	"
1889.	2,976,765	"	"
1890.	3,166,177	"	"
1891.	3,405,365	"	"
1892.	3.366,792	"	"
1893.	4,456,443	"	"

Corn.—The canned corn pack of 1893 was very large. The following comments and figures are from the *American Grocer*. The figures for 1893 are under rather than over the true amounts, as probably not all the returns were in at the time the footings were made. "In our report of last year we stated that a pack of 3,500,000 cases is barely abreast of consumptive requirements. We adhere to that opinion. Any excess over that quantity, whether it be 100,000 cases, or 500,000 cases, left in first hands, puts the market in an unsatisfactory condition. This year, under unfavorable trade conditions, there are 700,000 cases beyond the annual consumptive needs of the country. It can be marketed and sent into consumption, but not without loss to holders. When associated packers perfect a plan to regulate production, then and not until then can they make corn-packing a profitable industry from year to year. The game is in their hands, but so long as every packer operates upon his individual estimate as to supply and demand, the advantage of the market will be with the jobbers and retailers. It is certain that the preceding figurers are below the actual results. In previous years we have met with no trouble in getting returns from Maine, while this year the reports are varied and conflicting. Large and influential packers claim that the pack in Maine was fully equal to that of 1892, while others claim it was 25 per cent. less. It is certain that the acreage was greater, and this increase offset in good part the loss by drouth." The following table shows the cases of corn (24 cans each) packed in the various States :

	1893. Cases.	1892. Cases.
Maine	609,167	727,167
Maryland and Virginia	540,057	618,733
New York	1,074,530	805,509
Illinois	626,496	464,500
Indiana	76,108	53,552
Iowa	470,381	310,315
Ohio	369,000	210,143
Nebraska	192,300	100,730
Kansas	32,950	27,775
Missouri	26,840	15,881
Michigan	1,200	400
Pennsylvania	57,513	22,100
Delaware	40,105	7,600
Other States	67,804	52,785
United States	4,184,451	3,417,190
Canada	117,000	113,889
United States and Canada	4,301,451	3,531,079

The pack of canned corn for the past nine years has been as follows:

	Cases.		Cases.
1885	1,082,174	1891	2,889,153
1886	1,704,735	1892	3,531,079
1887	2,311,424	1893	4,301,451
1888	3,491,474		
1889	1,760,300	Total for nine years	22,660,650
1890	1,588,860	Average annual pack	2,517,850

Imports and Exports of Vegetables.—Our eastern markets continue to receive large quantities of vegetables from Europe and the West Indies. In midwinter, 1893-4, some 40,000 sacks of Scotch potatoes arrived in New York in one month. Early in 1894, new potatoes began to arrive from Havana, selling in New York for $6 per bbl. Bermuda old potatoes were also in the market. Cabbages from Denmark brought $10 per hundred. Brussels sprouts from France sold at the same time for twenty-five cents per pound, and French cauliflowers at forty and fifty cents each. A remarkable feature in the vegetable market of New York, for a week or two preceding Christmas, was the sale of several tons of forced rhubarb, of which it is said that over ten tons were received from Liverpool. In early spring, Cuba is in the habit of furnishing New York markets with string beans, peppers, okra, egg-plants and other vegetables.

IMPORTS OF VEGETABLES.

Dutiable.	1892.	1893.
Beans and peas	$1,079,910	$1,525,154
Potatoes	417,172	1,998,708
Pickles and sauces	449,645	398,00
All other vegetables		
In natural state	606,368	692,637
Prepared or preserved	662,204	564,553
	$3,215,299	$5,179,056

EXPORTS OF DOMESTIC VEGETABLES.

	1892.	1893.
Beans and peas	$920,066	$601,603
Onions	55,819	57,729
Potatoes	604,417	708,757
Canned vegetables	305,265	247,157
All other, including pickles	147,813	164,633
	$2,033,380	$1,779,879

§2. GENERAL AND MISCELLANEOUS INTERESTS.

I. FLORICULTURAL INTERESTS.

The most striking circumstance of the year in floricultural directions was the chrysanthemum show at Chicago, following the World's Fair, November 4 to 12. Arrangements for this exhibition were not completed until very late in the season, but the results were nevertheless satisfactory. "While there was, of course, room for criticism," says *American Florist*, "the show was undoubtedly a grand success from every point of view, for this is the verdict of every trade visitor familiar with exhibitions; and that it was national in character is shown by the many States represented by exhibits. Indeed, one award was made to a firm in England. . . . In view of this entry and those from Canada, the show may be said to have been international." The best part of the exhibition was that devoted to cut flowers, and the huge vases of fifty blooms were centers of attraction. The paid admissions, at fifty cents each, were 17,531.

The awards to all plants are given below. The list is not official, but it is probably complete.

Class 1—J. C. Vaughan, Chicago, first prize for vase of fifty blooms, white; J. A. Peterson, Cincinnati, third prize.

Class 2—Vase of fifty blooms, yellow, first prize, J. C. Vaughan; second prize, Nathan Smith & Son, Adrian, Mich.; H. W. Buckbee, Rockford, Ill., third prize.

Class 3—Fifty blooms, pink, E. G. Hill & Co., Richmond, Ind., first prize; John Curwen, Jr., Nashville, Tenn., second prize; W. N. Rudd, Mount Greenwood, Ill., third prize.

Class 4—Vase of fifty blooms, crimson, Nathan Smith & Son, Adrian, Mich., first prize; Geo. Miller, Chicago, second prize; Ernst Asmus, West Hoboken, N. J., third prize.

Class 5—Vase of fifty blooms, bronze, Ernst Asmus, West Hoboken, N. J., third prize.

Class 6—Vase of fifty blooms, any other color, E. G. Hill & Co., Richmond, Ind., first prize; Ernst Asmus, second prize.

Class 7—Best forty-eight varieties, one bloom each, first prize, fifty dollars, E. G. Hill & Co., Richmond, Ind.; second prize, forty dollars, W. N. Rudd, Mount Greenwood, Ill.; third prize, Wm. Scott, Buffalo, N. Y.

Class 8—Best twenty-five varieties, one flower each, first prize, E. G. Hill & Co., Richmond, Ind.; second prize, O. J. Friedman; third prize, Corbrey & McKellar, Chicago.

Class 9—Best twelve varieties, one flower each, first prize, E. G. Hill & Co., Richmond, Ind.; second prize, Nathan Smith & Son; third prize, G. W. Curry & Co., Nashville, Tenn.

Class 10—Twenty-four Japanese distinct, one flower each, first prize, E. G. Hill & Co., Richmond, Ind.; second prize, Ernst Asmus, West Hoboken, N. J.

Class 11—Best twelve Japanese distinct, one flower each, no first prize; second prize, E. G. Hill & Co.; third prize, C. R. Gallup, Denver.

Class 12—Best twelve Chinese incurved, Nathan Smith & Son, first prize.

Class 13—Best six Chinese incurved, first prize, Nathan Smith & Son.

Class 14—Best twelve anemones, distinct varieties, first prize, Pitcher & Manda, Short Hills, N. J.; second prize, Nathan Smith & Son.

Class 15—Best six anemones, distinct varieties, first prize, Nathan Smith & Son; second prize, Pitcher & Manda.

Class 18—Best twelve vases, six flowers, one variety in each, stems not shorter than eighteen inches, first prize, Thomas H. Spaulding, Orange, N. J.; second prize, E. G. Hill & Co.; third prize, O. J. Friedman.

Class 19—Best six vases, twelve flowers, one variety in each, stems not shorter than eighteen inches, first prize, E. G. Hill & Co.; second prize, O. J. Friedman; third prize, Nathan Smith & Son.

Class 20—One vase twelve flowers, white, stems eighteen inches, first prize, J. C. Vaughan; second prize, E. G. Hill & Co.; third prize, Ernst Asmus.

Class 21—One vase, yellow, twelve flowers, stems eighteen inches, first prize, E. G. Hill & Co.; second prize, J. C. Vaughan; third prize, W. N. Rudd.

Class 22—Best vase, pink, twelve flowers, first prize, W. N. Rudd; second prize, E. G. Hill & Co.; third prize, Nathan Smith & Son.

Class 23—Best vase, crimson, twelve flowers, stems not less than eighteen inches, first prize, G. W. Curry & Co.; second prize, Nathan Smith & Son.

Class 24—Vase any other color, twelve flowers, stems eighteen inches, first prize, E. G. Hill & Co.

Class 25—Twelve varieties American origin, one flower each, long stem, first prize, E. G. Hill & Co.; second prize, F. Dorner & Sons, Indianapolis.

Class 26—Best twelve varieties European origin, one flower each, first prize, E. G. Hill & Co.

Class 27—Best twelve varieties Japanese origin, one flower each, first prize, E. G. Hill & Co.

ROSES.

Class 50—American Beauties, best twelve, first prize, O. P. Bassett, Hinsdale, Ill.; second prize, O. P. Bassett.

Class 52—Kaiserin Augusta Victoria, first prize, W. W. Coles, Kokomo, Ind.; second prize, F. R. Pierson, Tarrytown, N. Y.

Class 53—Best twelve Mme. Caroline Testout, first prize, W. W. Coles; second prize, F. R. Pierson.

Class 54—Best twelve Bridesmaid, first prize, Oakwood Rose Garden, Oil City, Pa.; second prize, W. A. Kennedy, Lake Forest.

Class 55—Best twelve Mermet, first prize, O. P. Bassett.

Class 56—Best twelve La France, first prize, O. P. Bassett; second prize, G. W. Curry & Co.

Class 57—Best twelve Mme. Cusin, first prize, G. W. Curry & Co.; second prize, F. R. Pierson.

Class 59—Best twelve Meteor, first prize, O. P. Bassett; second prize, F. R. Pierson.

Class 60—Best twelve Perle des Jardins, first prize, O. P. Bassett; second prize, M. A. Hunt, Terre Haute, Ind.

Class 61—Best twelve Sunset, first prize M. A. Hunt.

Class 62—Best twelve Papa Gontier, first prize, W. A. Kennedy.

Class 63—Best twelve any other variety, first prize, O. P. Bassett; second prize, Oakland Rose Gardens.

CARNATIONS.

Class 64—Best 50 white, first prize, F. Dorner & Son; second prize, O. J. Friedman.

Class 65—Best 50 yellow, first prize, R. Witterstaetter, Sedansville, O.

Class 66—Best 50 pink, first prize, F. Dorner & Son; second prize, F. Dorner & Son.

Class 67—Best 50 red, second prize, O. J. Friedman.

VIOLETS.

Class 70—Best 100 white, first prize, O. J. Friedman.

Class 71—Best 100 blue, first prize, O. J. Friedman; second prize, Anchorage Rose company.

MIGNONETTE.

Class 73—Best 100 spikes, first prize, Dailladouze Bros., Flatbush, L. I.

LILY OF THE VALLEY.

Class 74—Best 200 spikes, first prize, Corbrey & McKellar; second prize, O. J. Friedman.

CHRYSANTHEMUMS—SEEDLINGS.

Best vase of white blooms, R. Witterstaetter, Sedansville, O.

Best vase of yellow blooms, E. G. Hill & Co., Richmond, Ind., with special medal to F. Dorner & Son, Lafayette, Ind.

Best vase of pink blooms, Fred Walz, Cincinnati.

Best vase of crimson, E. G. Hill & Co., Richmond, Ind.

Best vase of bronze blooms, J. C. Vaughan, Chicago.

Best vase of any other color, E. G. Hill & Co., Richmond, Ind.

Best seedling on exhibition not yet disseminated, any color, twelve blooms, E. G. Hill & Co., Richmond, Ind.; $100 premium.

Best 100 blooms in vase, white, J. C. Vaughan, Chicago.

Best 100 blooms in vase, yellow, E. W. Weiman, Mount Vernon, N. Y.

Best vase of any color, with autumn foliage, Art Floral Company, Chicago.

Best basket of chrysanthemums, not less than thirty inches, O. J. Friedman, Chicago.

ROSES.

Best new seedling roses of European origin, not exhibited previous to 1892, not less than twelve blooms, W. W. Coles, Kokomo, Ind.

Best fifty roses shown in vase, on long stems, Oakwood Rose Gardens, Oil City, Pa.

Best fifty American Beauties, O. J. Friedman, Chicago.

Best display of cut roses, W. A. Kennedy, Lake Forest, Ill.

CARNATIONS.

Best new seedling carnation, not less than twelve blooms, estate of N. Singler, Washington Heights, Ill.

ORCHIDS.

Best display of cut orchids, O. J. Friedman, Chicago.

LILIES OF THE VALLEY.

Best display of cut lilies of the valley, O. J. Friedman, Chicago.

Best 200 spikes—O. J. Friedman.

CYPRIPEDIUMS.

Best collection, Pitcher & Manda, Short Hills, N. J.

MISCELLANEOUS.

Best general display, M. F. Gallagher.

Best display tuberous begonias, Jas. Dean, Bay Ridge, N. Y.

Best display decorative plants, orchids and stove plants, E. G. Uihlein, Chicago.

The most startling novelty is the Pitcher & Manda, a big flower with a yellow center and white border.

ROSES.

Best twelve American beauties—First and second, O. P. Bassett, Hinsdale, Ill.

Best twelve American belles—First, O. P. Bassett.

Best twelve Madame Caroline Testout—First, O. P. Bassett; second, Peter Reinberg, Chicago.

Best twelve bridesmaids—First, A. C. Samuelson; second, W. A. Kennedy, Lake Forest.

Best twelve Catherine Mermet—First, O. P. Bassett; second, G. W. Currey & Co., Nashville.

Best twelve La France—First C. A. Samuelson, Chicago; second O. P. Bassett.

Best twelve Madame Cusin—Second, G. W. Currey & Co.

Best twelve Meteor—First, O. P. Bassett; second, Peter Reinberg.

Best twelve Perle des Jardins—First, O. P. Bassett; second, G. W. Currey & Co.

Best twelve Papa Gontier—First, George Reinberg; second, W. A. Kennedy.

Best twelve any other variety—First, Reinberg Bros.; second, O. P. Bassett.

SPECIAL CLASS BRIDES.

First premium—Oakwood Rose Garden, Oil City, Pa.; second, O. P. Bassett.

CARNATIONS.

Best fifty white—First, Stollery Bros., Argyle Park; second, Geo. Reinberg.

Best fifty pink—First, Art Floral Co., Chicago; second, Reinberg Bros.

VIOLETS.

Best 100 white—O. J. Friedman.

Best 100 blue—First, Thos. De Voy & Son, Poughkeepsie; second, O. J. Friedman.

Best 100 single—O. J. Friedman.

The New Chrysanthemums registered in 1893 with the secretary (Elmer D. Smith) of the National Chrysanthemum Society of America,* are as follows:

By W. A. CHALFANT, Springfield, Mo.—Clinton Chalfant.

By J. CONDON, Brooklyn, N. Y.—The Jack Van Nostrand, Henry W. Beecher, Gladys Howell, Theodosia, Margery Ferguson, Chauncey M. Depew, Our Mary, The Victor, Katherine Schaus, Mrs. Hugh M. Laughlin, Laura, Maggie Rutherford, Schaglaticoke, Ella Belzer Ottmann, Sister Kate, The Clara, Billy Florence, Harry L. Luckenbach, Mabel Alida, Lillie M. Thomas, Marion, David A. Boody, Mrs. R. V. Harnett, James Willie McBarron, Nellie F. Condon, Lizzie Ross McKee, Eleanor Elgar, Thos. S. Dakin, Nellie Nicoll, Bessie Mayhew, Sara, Christine Hayward, Annita Carlotta, Cora, James Gordon Bennett, Bessie Greenman.

By FRED. DORNER & SON, Lafayette, Ind.—Autumn Glow, Major Bonnafow.

By JOHN S. FORSTER, Evanston, Ill.—Erato, Hiawatha, Eureka, Polyphemus, Brick Top, Monte Vista, Camilla, Nisus, Endymion, Orange Judd, Minnehaha, Proserpine.

By HUGH GRAHAM, Philadelphia.—Mrs. Craig Lippincott, Josephine, Philadelphia, Lady Somersett, Frances B. Willard, Mars, Mrs. J. R Jones, Mrs. R. C. Ogden, Rev. J. C. Hanna, Mrs. J. D. Eisele.

By T. D. HATFIELD, Wellesley, Mass.—Prairie Rose, Semden, Columbine.

By E. G. HILL & CO., Richmond, Ind.—Mrs. E. G. Hill, Eugene Dailledonge, Challenge, Inter Ocean, Beau Ideal.

By JOHN MCCLEARY, Germantown, Pa.—Mrs. R. J. C. Walker.

By JOHN N. MAY, Summit N. J.—Achilles, Malmaison, Mayflower, Minerva, Titian, Yellow Queen, Conspicua, Infatuation, Agrippa, Colloseum, Venus de Medici, Castilliar, Zalinda, Sunrise, Constellation, Pluto, Peach Blossom.

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*At a meeting of the Amer. Chrys. Soc. in 1892, it was voted that the secretary should furnish annually to Annals of Horticulture a list of the registrations of the year.

By H. W. RIEMAN, Indianapolis, Ind.—J. J. B. Hatfield, Mrs. E. H. Hunt, Mrs. F. G. Darlington.

By JOHN H. SIEVERS, San Francisco, Cal.—Mrs. J. Geo, Ills.

By NATHAN SMITH & SON, Adrian, Mich.—Laredo, Oriana, Pompadour, Iora, Miss Hattie Bailey, Nyanza, Ursino, Durango.

By THOS. H. SPAULDING, Orange, N. J.—Esther Cleveland.

By HENRY G. STRANDEN, Haverford, Pa.—Miss Mary E. Simmons, H. F. Michell, Mrs. Howard Roberts, Mrs. B. F. Cole, Queen Isabella, Madame Dupuy de Lome, Mr. Wm. H. Joyce.

By F. S. WALZ, Cincinnati, O.—Mrs. Potter Palmer.

By R. WITTERSTÆTTER, Sedansville, O. — Marie Louise, The Debutant.

The American Rose Society, for which the preliminary movements were made in 1892,* has been formally organized during the year by the adoption of a constitution † and the election of the following temporary officers: President, M. A. Hunt, Terre Haute, Ind.; Vice-president, Robert Craig, Philadelphia; Treasurer, John N. May, Summit, N. J.; Secretary, H. B. Beatty, Oil City, Pa. The first formal annual meeting of the society was held this year at St. Louis, in connection with the Society of American Florists, but, owing to the small number present, permanent organization was referred to a committee.

Emblematic Flowers.—The discussion of emblematic flowers has continued throughout the year. The most notable contribution to this agitation is Miss Candace Wheeler's book, "Columbia's Emblem: Indian Corn. A Garland of Tributes in Prose and Verse." "No other plant," the author declares, "is so typical of our greatness and prosperity as a nation; no other has such artistic meanings and possibilities; no other is so wholly and nobly and historically American."

Upon the Fourth of July, a booth was opened in the Woman's Building at the Columbian Exposition, to receive votes upon a national flower, and it was noticeable that maize led in popular favor.‡ The State of Washington, by a recent action of its legislature, has adopted the native rhododendron (*R. Californicum*) as the emblem of the commonwealth.§

Flowers in Landscape Gardening.—Among discussions of general interest, there has arisen nothing more important during the year than the debates concerning the place of

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* See Annals for 1892, 57.

† See Amer. Florist, viii. 890 (Mar. 30, 1893) for the constitution, and also for much interesting matter pertaining to the rose.

‡ The result of the vote on July 4th, for instance, was as follows:

Indian corn, adults,	216	
children,	23	
		239
Sunflower,		37
Laurel (Kalmia),		22

§ For other discussions of emblematic flowers, see Annals for 1889, 82; Annals for 1890, 35; Annals for 1892, 56. Also Horticulturists' Rule-Book, 2nd Ed. 133.

flowers in landscape ornamentation. The subject was opened in 1889* by a powerful invective against formalism and carpet-bedding in landscape gardening, by William MacMillan, of the Buffalo Parks. Since this time, the florists have thrown themselves into the aggressive in the endeavor to save the florist business one of its most profitable outlets. The discussion has been largely a mistaken one, for the florists have seemed to understand that the landscape gardeners of the naturalistic school attack the use of flowers in general, while they have only endeavored to reform the popular taste for gross "designs." Nevertheless, the discussion has occupied a leading place in the minds of florists and others during the last three or four years. It is evident that a revolution is working. At the Horticultural Congress in Chicago, the debate reached its highest level, where the consideration of landscape gardening interests took the form of a discussion upon the uses of color in landscapes. William MacMillan opened the subject with an emphatic plea for naturalistic treatment of grounds. He was answered in a forcible manner by Robert Craig, who contended that the love of color and symmetry and conventional design are inborn in the human mind, and quite as worthy of gratification as the purely naturalistic impulse. The discussion was resumed in the florists' session on the evening of the following day. It was apparent that the florists were feeling as if some strong effort must be made to save the floricultural part of landscape decoration, and much of the discussion appeared to be forced. The florists again seemed to overlook the fact that the landscape gardeners do not discourage the use of color, but that they object to the promiscuous insertion of merely conventional designs in places which are meant to be unconventional. There was no objection to color, but rather to color out of place. The purposeless use of formal color beds has discredited the value of flowers in artistic landscape gardening, a result for which the florists themselves are largely responsible.

2. ORGANIZATION ENTERPRISES.

The organization movements which arose in connection with the Columbian Exposition are undoubtedly to be considered among the most important horticultural tendencies of the year, particularly if measured by their possible ultimate effects. The Exposition itself affording a strong organization of horticultural forces, and it was, perhaps, the first successful attempt in this country to combine pomology and floriculture as coördinate branches of one composite industry.

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* See Annals for 1889, 34.

Congress on Horticulture.—This was a part of the general plan of international conventions promulgated by the World's Congress Auxiliary, convened in Chicago on the 16th of August, and continued two days. The Congress was designed to represent the entire field of American horticulture, and it was held under the patronage of the four great national societies—The American Pomological Society, Society of American Florists, American Seed-Trade Association, and American Association of Nurserymen. The immediate charge of the Congress fell to a local committee, of which J. C. Vaughan was chairman. A general session was held upon the morning of the 16th, and thereafter the business of the Congress came before four separate sections representing the respective societies. The general convention attracted an audience of one hundred and fifty persons, mostly of men distinguished in various horticultural professions. The gathering was fairly representative of the main branches of horticulture in America—except vegetable gardening—and, to some extent, of the world. It was the first national occasion, in America, which designed to call together the various horticultural trades and professions, and the fact that this representation was secured is perhaps the best outcome, for America, at least, of the Congress. It has long been the desire of a few prominent horticulturists that all the national horticultural societies of the country should unite in a confederation similar to the aggregation of scientific organizations known as the American Association for the Advancement of Science. Such a permanent union or academy of horticulture would add greatly to the strength of every society participating in it, while it would in no way interfere with the autonomy of each; and a yearly gathering of all the horticultural interests of the continent would originate a force which all legislators would be compelled to heed, and would greatly popularize horticultural affairs throughout the land.

Fortunately, there arose a definite movement to bring about this confederation of the national societies. The American Pomological Society, at its social reunion on the occasion of the Congress, voted to hold its next regular meeting in San Francisco during the winter of 1894–5, and to invite all national horticultural societies to join it in a great excursion to the Pacific Coast. There is, unfortunately, some opposition to a compact, especially from the older societies, but the advantages of a union are so great that any sentimental or incidental objections must finally subside. There are now ten American horticultural societies, most of them meeting at different times and in different places. Many persons are interested in two or more of these organizations, but cannot afford the time or expense of attending more than one. If these societies should unite to form an Academy of American Horticulture, one society following another with its meetings, all could be compassed within the space of a week or ten days, and the visitor could enjoy the privileges of all of them. The present detached efforts divide and scatter horticultural interests, and greatly weaken what is of right a mighty power in the land. Pomology and floriculture and seed-growing and the nursery are thought of as diverse interests because of the detached organizations which represent them, while the vital features of all are really common and should sustain each other.

Good results attended the Congress in other ways. Twenty-three excellent papers were read,* and it is expected that these will be published in book form. The addresses covered a wide range of topics, but technical education, landscape gardening, and subjects connected with the evolution of plants were the topics which, in one form or another, consumed the greater part of the time. Twenty, or even ten years, ago these topics would have been considered dry and unpractical. Now they are discussed with directness and earnestness by both cultivators and professors. The times are changing rapidly and for the better. Foreign guests were few, but they numbered some distinguished persons—Henri L. de Vilmorin, Professor Dr L. Wittmack and J. Pedersen-Bjergaard. The attendance was small, largely because the programs were not announced until it was too late to advertise them to the country and the world. The pomological and nursery interests, for various reasons, did not respond quickly. The nurserymen had already held their stated annual session in June, and could not be induced to return so soon. Many of the florists, however, returned to Chicago from the St. Louis meeting, and the seedsmen held their annual session in Chicago just preceding the Congress. These trades, therefore, comprised the greater part of the attendance at the Congress. The pomologists let slip a good opportunity to impress themselves upon the country. The Congress cannot be said to have measured the extent and virility of American horticulture, and it would not be fair to call it an international effort; but it was good so far as it went, and its influence should be great.

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*The program, as finally carried out, was as follows:

General Session. Wednesday, August 16th, 10 a. m. Presiding officer, P. J. Berckmans.

Address of Welcome by President C. C. Bonney, and Responses.

Technical Horticultural Education—Professor William Trelease, of Missouri Botanical Gardens.

Improvement and Care of Public Grounds; Developing and Conserving Natural Beauty—William MacMillan, Buffalo Parks.

The Improvement of Public School Grounds—S. M. Emery, Lake City, Minn.

Relation of Experiment Stations to Commercial Horticulture—Charles W. Garfield, Michigan.

Horticultural Displays at Future World's Fairs—Professor Dr. L. Wittmack, Berlin, Germany.

Nurserymen's Session. Thursday, August 17th, 10 a. m. Japanese Nurseries, Dwarfing of Plants and Miniature Gardening—Henry Izawa, Gardener to the Japanese Commission, Columbian Exposition.

Inter-State Laws to Control Insects and Diseases—Edward Willits, Assistant Secretary of Agriculture.

Status of the Nursery Trade on the Pacific Slope—Robert Williamson, Cal.

The Influence of Village Improvement Societies in Securing and Improving Grounds—B. G. Northrup, Conn.

Forecast of Better Things Amongst Grapes—T. V. Munson, Denison, Texas.

Seedmen's Session. Thursday, August 17, 10 a. m. Pedigree or Grade Races in Horticulture—Henri L. de Vilmorin, Paris, France.

Seed Growing in Denmark—J. Pedersen-Bjergaard, Copenhagen.

Selection in its Relation to Seed Growing—C. L. Allen, Floral Park, N. Y.

American Seed Growing—C. C. Morse, Santa Clara, Cal.

(The above four papers, with others and discussions, are published in a small volume entitled "Selection in Seed Growing," by W. Atlee Burpee & Co., Philadelphia.)

Florists' Session. Thursday, August 17, 8 p. m. The Present of Floriculture—Robt. Craig, Philadelphia, Pa.

The Future of Floriculture—E. G. Hill, Richmond, Ind.

Pomologists' Session. Thursday, August 17th, 8 p. m. Location and Environment as Affecting the Evolution of Fruits—G. B. Brackett, Iowa.

Catalogue and Nomenclature—T. T. Lyon, South Haven, Mich.

Vine Culture and Products—George C. Snow, Penn Yan, N. Y., and Geo. W. Campbell, Delaware, O.

Commercial Apple Culture—F. Wellhouse, Fairmount, Kans.

The Orange—Dudley W. Adams, Florida.

World's Horticultural Society.—A conspicuous fruit of the horticultural assemblages at Chicago was the organization of a World's Horticultural Society. The preliminary call for this organization was issued by J. M. Samuels, Chief of the Department of Horticulture, immediately following the Horticultural Congress. Invitations were issued to all the prominent horticulturists and to foreign commissioners known to be in attendance at the World's Fair. The meetings were several in number, and they were marked by enthusiasm and an apparently unanimous desire for some organic body which shall have facilities for bringing the horticultural interests of the world nearer together. The society, as finally organized, is designed less to hold meetings than to facilitate correspondence and the exchange of information between all countries. The general charge of this great society resides in three officers: The president; vice-president at large; secretary-treasurer at large. There is to be a vice-president and a secretary-treasurer for each country, who shall direct the affairs of the society in their respective countries. The officers elected at Chicago upon the 25th of August, 1893, were: Prosper J. Berckmans, A. M., Augusta, Georgia, U. S. A., president; Henri L. de Vilmorin, Paris, France, vice-president; George Nicholson, secretary-treasurer, Curator of the Royal Gardens, Kew, England. Later the president appointed William F. Dreer, of Philadelphia, vice-president for the United States, and Mr. Dreer appointed Professor L. H. Bailey, Cornell University, Ithaca, N. Y., secretary-treasurer for the United States. At this juncture, Mr. Nicholson declined the office of secretary-treasurer at large, as it would be inconsistent with his present duties. This was a source of great regret to his many friends and admirers. Until a successor is elected, the secretary-treasurer for the United States is to act in the capacity of general secretary-treasurer.

The constitution of the World's Horticultural Society reads as follows:

"This body shall be known as the World's Horticultural Society.

"The object of this society shall be to promote correspondence and to facilitate exchange of plants and information between the countries of the world.

"The membership of this society shall be composed of societies in the various countries and of individuals, who shall subscribe to its constitution and pay the membership fees.

"The officers of this society shall consist of a president, first vice-president, and a secretary-treasurer; also a vice-president and a secretary-treasurer in each country, independent State or Province, whenever suitable persons can be found who are willing to undertake the duties of such office. The officers shall constitute an executive committee, which may call meetings on such occasions of interest as may be deemed worthy.

"The term of office of all officers of this society shall be three years, and until their successors are duly elected and qualified.

"The vice-president in each country shall be appointed, at the outset, by the president of the World's Horticultural Society, after conference with the foreign representatives at the World's Columbian Exposition, or upon correspondence with horticulturists in the various countries.

"The vice-president of each country shall appoint the secretary-treasurer for that country.

"The fee for societies shall be five dollars annually, or as near that amount as the currency of the country readily admits. The initial fee for individuals shall be two dollars, or approximately that amount, which fee shall also be the dues for the remainder of the current calendar year. The annual dues thereafter shall be one-half that sum.

"The funds shall be spent by the executive committee for the necessary expenses of the society, which shall allow one-third of all the collections in each country to be retained there for its own expenses and to be disbursed by its own secretary, except in the country represented by the president, where all the funds collected shall be retained, but that country shall pay its share of the general expenses. The executive committee has power to publish a periodical of the size and frequency of issue warranted by the funds, and which shall be sent free to all members of the society. In the absence of meetings of the executive committee, the president, first vice-president, secretary-treasurer, and the secretary-treasurer of the country represented by the president, shall constitute a finance committee, which shall audit the accounts of the society, any two of whom shall constitute a quorum.

"The president, first vice-president, secretary-treasurer, and secretary-treasurer of the country represented by the president, constitute the committee on by-laws of the World's Horticultural Society, any two of whom shall constitute a quorum."

It will be seen that the completion of the organization of the society lies with the three officers chosen at Chicago. The president is to appoint the vice-president in each country, and this officer, in turn, appoints the secretary-treasurer for his country. Probably a year will elapse before the details of this organization are completed, even for the chief horticultural countries of the world, and before active work can be undertaken. In the meantime, the constitution and an explanatory circular have been translated into French, German and Spanish, and have been dispatched to the agricultural and horticultural press of the world.

The mission of the society must lie in the collection and publication of information in the form of directories, statistics and abstracts, which shall be of such character as to facilitate business or aid inquirers and students. The publication will probably be made in four languages, and it will be distributed to all members of the society. Some of the specific directions in which the society may render invaluable service are in compiling reports upon the following topics: Directories of official (governmental) bureaus which have charge of horticultural industries. Laws concerning the transportation of plants, and those designed to control the spread of insect pests and plant diseases. Directories of the horticultural societies of the world, and similar ones of firms or individuals interested in particular pursuits or trades. Directories already in existence can be translated and distributed. Directories of colleges and schools engaged in agricultural instruction, with synopses of methods. Directories of periodicals. Lists of the books of each year. Digests of important experiments. Crop and market reports. Botanic gardens of the world. The central office should acquire sufficient knowledge of the horticultural activities of the globe that it shall be able to give advice to all members who may desire to correspond with distant countries upon any given topic, or who may wish to obtain certain plants or information. Societies are eligible to membership, and they may have the privilege of publishing prepared abstracts and lists in their reports for the benefit of their own members.

National League of Commission Merchants.—On the 6th of January, 1893, some twenty merchants associated with commission houses in various cities, met at the Tremont House in Chicago, to organize a national body or league. The proposition was to organize a local league in the large commercial centers of the country, the whole to form a National League, which shall meet annually to promote the interest of shippers and receivers alike, to divest the business of abuses that are said to arise and creep into it, and more especially to avoid and render ineligible a class said to embark in the business as adventurers and irresponsible men. Only houses of known reputation, financially responsible and of trustworthy business methods shall be eligible to membership.

The organization was formed and it appears to have risen into a sphere of activity and usefulness. Some of the specific objects of the League are declared as follows: "The rapidity and facilities of transportation make all markets accessible, all products obtainable; the products of a single farm, dairy or garden may be distributed over and consumed in more than half the States in the Union. Every grower, producer, or shipper may reach the National League through his commission merchant, and have his views for the general welfare carefully considered. Farmers' clubs, fruit and vegetable growers' associations, shippers of butter and other dairy products, and all commercial organizations, will find us ready to unite with them in defeating unjust laws, in collecting and disseminating information, in improving business methods, in resisting discriminations, and exactions, and in demanding and enforcing responsibility and integrity. We claim no section; we are non-partisan and non-sectarian. We guarantee our sympathy and support to every enterprize that may increase the rewards of labor or add to the comfort or happiness of the home."

Gift Packages.—The organized movement on the part of dealers, in the East, towards the general adoption of gift packages*, or those which are sold with the product rather than returned to the producer, is making decided progress. It is in favor amongst a large proportion of the growers, and the movement is certainly destined to awaken universal consent. Many good growers still oppose the gift package, however, and in order that the reasons for so doing may be preserved. a circular of protest issued to receivers and dealers in berries early in the year by the Monmouth county (N. J.) Fruit Growers' Association, is given in full: "Having received notice that certain dealers in berries refuse to handle berries shipped in returnable crates, we, the growers of small fruits in Monmouth County, N. J., do most emphatically protest against such action, for the following reasons:

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*Annals for 1892, 125.

"1st. All growers have a number of crates on hand. These have cost considerable, and will be worth no more than gift crates, thereby causing much loss.

"2d. The expense of growing, picking, freight, cartage and commission, with the additional expense of gift packages, will force us to abandon the growing of berries, as the expense will overbalance the profits.

"3d. In regard to obtaining better prices for fruit in gift packages, we know positively, from experience, that it does not follow, but that prices are controlled by the supply entirely.

"4th. As to reduced freight, no transportation company will make any reduction, as it really costs nothing to return empties when the boat or car returns unloaded.

"5th. It is impossible to make a correct estimate of the number of packages required to market the crop, and we have found by experience that new crates are difficult to get after the crop has ripened, thereby frequently causing heavy losses.

"6th. That with all liberal allowances in favor of gift crates we find that the proportion is as twenty to one in favor of returnable crates, or in other words, that where it costs the producer one dollar now it will cost him twenty dollars to furnish gift packages."

3. EDUCATION.

In specific educational matters there appears to have been no movement originating within the year in America. The most important recent innovation in educational methods as applied to agricultural instruction is the introduction of short and popular winter courses in many institutions.* At the Horticultural Congress in Chicago, discussions upon matters of education took a new turn. Heretofore, the societies have advocated and emphasized the importance of education in the abstract, but upon this occasion Professor Trelease questioned if technical horticultural education—that which is designed to fit the student directly for a trade—is in demand in this country, or if the pay of the horticulturist warrants much expense in the way of preliminary school training. It seemed to be the general opinion that America is not yet ready for the technical horticultural schools which flourish in Europe, unless, perhaps, in the direction of floriculture. Our agricultural education should continue for a time to be somewhat general, and to contemplate fitting the farmer for citizenship quite as much as for farming.

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*For a detailed discussion of farmers' institutes, societies and university extension, see Annals for 1891, 137-152.

Horticultural Education in Nova Scotia.—The only new foundation for a horticultural school during the year has been made in Nova Scotia; and this appears to be the only instance in the New World in which a distinct institution has been founded solely for purposes of instruction in horticulture. The organization is also unique. The provincial Fruit Growers' Association assumes the main support of the institution, while the government contributes a stated sum for each student in attendance. The school opened late in 1893 at Wolfville, with a fair attendance, and with Professor Faville at its head. The course extends through two years. It is expected that an experiment station will be added to the institution soon. The Provincial legislation seconding this novel venture is as follows:

"*An Act to Encourage the Establishment of a School of Horticulture.*—Whereas, the Nova Scotia Fruit Growers' Association proposes to establish and conduct a School of Horticulture, and it is believed that the successful carrying out of the undertaking would promote the important interests of fruit growing in our Province, and it is expedient that reasonable aid be granted from the Provincial treasury to the undertaking;

"Be it therefore enacted by the Governor, Council, and Assembly, as follows:

"If the Nova Scotia Fruit Grower's Association, or any other body, shall establish and conduct an efficient School of Horticulture, and shall make satisfactory arrangements for the diffusion throughout the Province of useful knowledge of fruit growing by means of lectures and otherwise, the governing body of such school shall, subject to the provisions of this Act, be entitled to receive annually from the Provincial treasury towards the support of such school the sum of fifty dollars for each pupil who shall have been regularly in attendance at the school for at least six months in the year, and shall have pursued such course of study as may be prescribed; provided, however, that the total sum payable to such school in any year shall not exceed two thousand dollars.

"2. The location of such school, the course of study, and all rules and regulations for the management of the school, shall be subject to the approval of the Governor in Council.

"3. This Act shall cease and determine if such School of Horticulture be not established within two years from the passing of this Act."

Nomenclature.*—In continuance of the endeavors of the American Pomological Society in reforming the nomenclature of fruits and of the Station Horticulturists in recasting the names of vegetables, the Society of American Florists at its last meeting

"*Resolved*, In view of the recommendations of the Nomenclature Committee, that a committee of three be appointed by the chair, the secretaries of the Chrysanthemum, Carnation and Rose Societies also to act as members, to prepare a list of decorative plants handled by the American trade, for consideration and adoption as the official list of this society; said committee to act under the following general instructions:

"1. Natural species and varieties shall bear the Latin names assigned to them in Nicholson's Dictionary, so far as they are named, except that where differences exist between the Dictionary and the Kew Index, now in course of publication, the name adopted by the latter shall be chosen. Species first published or reinstated subsequent to the date of the latter (1885) shall be treated in accordance with botanical custom, especially that of the Kew Gardens. In all cases where the application of this rule shall cause the displacement of a commonly used and well-known name, the latter shall be added as a synonym.

"2. Florists' varieties, races and forms shall be named in accordance with the recommendations of the Nomenclature Committee this day submitted; but the greatest conservatism is counseled in all changes which are likely to cause confusion or detriment to legitimate business interests."

The recommendations of the Nomenclature Committee, referred to above, and of which Professor Trelease was chairman, made a report in which the rules adopted by the American Pomological Society and the Station Horticulturists concerning the names of varieties were commended, and which urged "upon those originating plants requiring new names, the employment of short, appropriate and neat vernacular names; the avoidance of misleading, long, high-sounding or vulgar names, and the use of Latinized names exclusively in connection with species and natural varieties."

A National Bureau of Horticultural Nomenclature.—At the last meeting of the American Horticultural Society in Chicago, late in 1892, T. T. Lyon read a paper urging the establishment of a national authority or bureau upon the names of new varieties. A committee was appointed to consider the recommendations of the paper, consisting of T. T. Lyon, J. L. Budd, George J. Kellogg, W. H. Ragan and George Husmann. The report of the committee is as follows:

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*See Annals for 1889, 78, 106; Annals for 1890, 129; Annals for 1891, 155.

"WHEREAS, The modern growth of horticulture has rendered the needful text-books quite too voluminous and expensive to warrant the hope of their revision, extension and republication as a private undertaking; and

"WHEREAS, Much of our earlier nomenclature includes more or less of crudity, verbosity, coarseness, and even vulgarity, unworthy to be recognized as science; and

"WHEREAS, The National Division of Pomology, acting in consonance with the established 'Rules of Pomology' of the time-honored American Pomological Society, is engaged in the preparation of a catalogue of American fruits, intended for general distribution; and

"WHEREAS, A similar effort is in progress among seedsmen for the purification and simplification of the nomenclature of that branch of horticulture; and

"WHEREAS, We regard the subject as one of interest to all classes of persons, and as pertaining specially to the horticultural branch of the National Department of Agriculture; therefore,

"*Resolved*, That as a Society, we recognize the importance of the subject and the wisdom and propriety of recognizing the several horticultural divisions of the National Department of Agriculture, each in its appropriate sphere, as authority upon questions pertaining to its specialty; and especially upon those bearing upon the adoption of a pure, simple and correct nomenclature, as well as upon the identification of varieties and the determination of their comparative values; and we urge that, to this end, such divisions be severally charged with this class of work, and that they be supplied with the facilities needed; therefore,

"*Resolved*, That in compliance with the foregoing, we urge upon the originators and introducers of horticultural novelties that, prior to publishing or placing such novelties on sale, these, together with their proposed names, be submitted to the proposed authority for such estimate of value and approval of name, and that in the absence of the requisite endorsement public patronage be withheld.

"*Resolved*, That we urge upon all societies, whether general or local, and also upon individuals, a rigid adherence to the foregoing processes as an effective means of arresting the present prodigal waste of both money and time upon a mass of worse than worthless novelties being constantly palmed off upon a too credulous public."

4. ENEMIES AND DISEASES OF PLANTS.

There appears to be nothing new in the year's results in combating insects and fungous pests, but there have been confirmations of previous experiments and methods. The most important results of the year are probably these: Further proof that the Bordeaux mixture is our best fungicide and that it can be advantageously used at half its original strength; demonstration that apple-scab can be profitably combated, and that various important secondary gains follow the applications of the fungicide;* proof that the Virgalieu and other pears which are passing out of favor because of the cracking of the fruit, can still be profitably grown by the use of the sprays;† complete control of the pear leaf-blight in commercial orchards in Virginia;‡ successful spraying against the fruit-rot and twig-blight of the peach.§

The Cornell Mixture.—An attempt was made during the year to combine the two chief insecticides—Paris green and kerosene emulsion—and Bordeaux mixture into one compound, by Mr. M. V. Slingerland of Cornell University. This is the first attempt, apparently, to combine the three compounds, and thus to form a cure-all insecto-fungicide. Experiments have revealed certain weaknesses in the mixture, but the attempt is nevertheless an important one, as the possible forerunner of a successful triple combination.‖ "Last winter, while experimenting in the making of the different insecticides and fungicides," Mr. Slingerland writes, "I succeeded in forming a combination which, at the time, seemed to be an almost perfect panacea for all the insect and fungoid ills that might affect the fruit grower. When it was shown to Professor Bailey he immediately dubbed it the 'Cornell Compound or Mixture.' . . . My Bordeaux and emulsion were made according to the common formulas. When the directions were carefully followed, I found that I could quite readily combine the two in any proportions required, and the resulting mixture remained stable for weeks; and in fact the Bordeaux, as a mechanical mixture, was improved, for the emulsion held the lime in suspension, so that its tendency to settle to the bottom, and thus require constant stirring, was reduced to a minimum. The addition of the Paris green to the Bordeaux before the emulsion was put in, did not visibly affect the mixture. Up to this point, therefore, the combination was a success. It now remained to be seen how it would stand a practical test by the ordinary fruit grower in the field. Theoretically, the chances were all in its favor.

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*Lodeman, Bull. 60, Cornell Exp. Sta.

†Beach, 39th Proc. W. N. Y. Hort. Soc. 56.

‡Waite, 39th Proc. W. N. Y. Hort. Soc. 156.

§Chester, 5th rep. Del. Exp. Sta. Experiments made in 1891 and 1892, but first fully reported in 1893.

‖For a full account of the Cornell Mixture, see *Science*, xxii. 105 (Aug. 25, 1893).

"However, further experimentation at the Insectary showed that unless the Bordeaux was rightly made, the emulsion would not form a stable combination with it, and in fact sometimes would scarcely mix at all. It was found that the best combination was obtained when the acid copper sulphate solution of the Bordeaux was exactly neutralized by the alkaline lime; the potassium ferrocyanide was the test to determine when this point was reached. Thus, when the Bordeaux was made in the usual way without testing, nine times out of ten the emulsion would not mix with it satisfactorily. Here, then, was the first obstacle to the Cornell mixture,—the difficulty of making it. In the spring I saw it made and applied on a large scale, with horse power sprayers. As far as the making and application were concerned, it was a success. It worked as easily through the sprayer and nozzle as the Bordeaux alone. But an examination of the trees after the sprayer had passed showed that the mixture had not spread so evenly over the tree as would either of the ingredients alone. And right here, I believe, is the weakest point in the Cornell mixture. The spray was thrown fine enough, but when it struck the trees the minute particles seemed to be drawn together, into larger oily drops, leaving considerable areas unwet. There is a tendency in the Bordeaux mixture alone to do this, but it was increased by the oil in the emulsion. . . .

"When properly made and applied it will be quite effective, each ingredient for the purpose it is intended. But I believe the effectiveness of each ingredient will be greater if they are not applied in combination, but singly. Thus, theoretically, the Cornell mixture has great possibilities, but, besides the difficulty of making, the effectiveness of each ingredient is lessened, and in consequence the practicability of the mixture is as yet doubtful, and I cannot freely recommend it for general use."

Enlisting Children in the Warfare Against Insects has been undertaken in Massachusetts* with gratifying results. *Gar-*

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*Annals for 1892, 123.

den and Forest makes the following comment upon the experiment: "Last year we gave some account of the efforts to check the spread of the tent-caterpillar in certain parts of Massachusetts by offering prizes to the children for collecting the largest number of egg-belts, as well as a certain sum for each thousand. We have received a circular which is signed by D. D. Slade, President, and L. H. Farlow, Secretary of the Newton Horticultural Society, which has been doing work of this kind. In the winter of 1891–92 it is estimated that 25,000 eggs of caterpillars were destroyed, and during the winter of 1892–93 more than 40,000 were destroyed. The city of Newton also appropriated $500 to be used under proper supervision for cutting down such trees as formed breeding-places for insect pests. The Newton Horticultural Society proposes to continue this work this year, and offers to pay a bounty of $1.00 for every thousand belts, while the city has appropriated $800 for the continuation of its work. The enlistment of children in this crusade against destructive insects is valuable, not only for its immediate effect in checking the ravages of these pests, but it has a certain educational value by encouraging in children habits of observation and furnishing object-lessons in more than one natural science."

Dropsical diseases of plants have been brought to the attention of American cultivators during the year, particularly by the writings of Atkinson and Halsted.*

5. LEGAL MATTERS.

There appears to have been little legislative activity during the year in specific horticultural directions. In Michigan, it was found that the peach yellows and black knot law passed in 1891 † was unconstitutional because it does not conform to the requirements of the State constitution which provides that "No law shall embrace more than one object, which shall be expressed in its title." The yellows law of 1891 violated this provision in two respects. It embraced more than one object, and one of its objects was not expressed in its title. This alone would have made necessary a revision. But in Ann Arbor another defect was discovered. The law provided for yellows commissioners only in townships, while it was soon found that such officers are desirable in the city, within the limits of which were some peach orchards infected with yellows and spreading the contagion to their surroundings. The mayor's attention being called to it, he decided, as was the fact, that he had no authority to appoint the much-needed commissioners. These defects were corrected and an amended bill was laid before the legislature and passed

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*G. F. Atkinson, Œdema of the Tomato, Bul. 53 Cornell Exp. Sta., Œdema of Apple Trees, Bul. 61, Cornell Exp. Sta. B. D. Halsted, Dropsical Pelargoniums, Bul. Torr. Bot. Club, xx. 391 (Oct. 1893).

† Annals for 1891, 104.

*The North Carolina Seed Law** has been declared void because it interferes with the shipment of seeds in original packages, and therefore violates the interstate commerce act (52 Fed. Rep. 802). This law was designed to protect purchasers from buying old and worthless seeds, by requiring sellers, except farmers who sell in bulk, to label seeds with the year in which they were grown.

Tomatoes are Vegetables.—A year ago, a legal decision classed watermelons as fruits in the meaning of the tariff law,† but a similar decision this year classes tomatoes as vegetables. The question came before the United States Supreme Court in an action, brought Feb. 4, 1887, against the collector of the port of New York to recover back duties, paid under protest, on tomatoes imported by Nix Bros. from the West Indies in the spring of 1886, which the collector assessed under "Schedule G, provisions," of the tariff act of March 3, 1883, chap. 121, imposing a duty on "vegetables, in their natural state or in salt or brine, not specially enumerated or provided for in this act, 10 per cent. ad valorem," and which the plaintiffs contended came within the clause in the free list of the same act, "fruits, green, ripe, or dried, not specially enumerated or provided for in this act." On May 10, 1893, Justice Gray delivered the opinion of the court, from which the following sentences are extracted:

> "There being no evidence that the words 'fruits' and 'vegetables' have acquired any special meaning in trade or commerce, they must receive their ordinary meaning. . . . Botanically speaking, tomatoes are the fruit of the vine, just as are cucumbers, squashes, beans and peas. But in the common language of the people, whether sellers or consumers of provisions, all these are vegetables, which are grown in kitchen gardens, and which, whether eaten cooked or raw, are, like potatoes, carrots, parsnips, turnips, beets, cauliflower, cabbage, celery, and lettuce, usually served at dinner in, with, or after the soup, fish or meats which constitute the principal part of the repast, and not, like fruits generally, as dessert. The attempt to class tomatoes as fruit is not unlike a recent attempt to class beans as seeds, of which Mr. Justice Bradley, speaking for this court, said: 'We do not see why they should be classed as seeds any more than walnuts should be so classified. Both are seeds in the language of botany or natural history, but not in commerce or in common parlance. On the other hand, in speaking generally of provisions, beans may well be included under the term 'vegetables.' As an article of food on our tables, whether baked or boiled, or forming the basis of soup, they are used as a vegetable, as well when ripe as when green. This is the principal use to which they are put.'"

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*Annals for 1892, 141.

†Annals for 1892, 140.

§ 3. THE COLUMBIAN EXPOSITION.

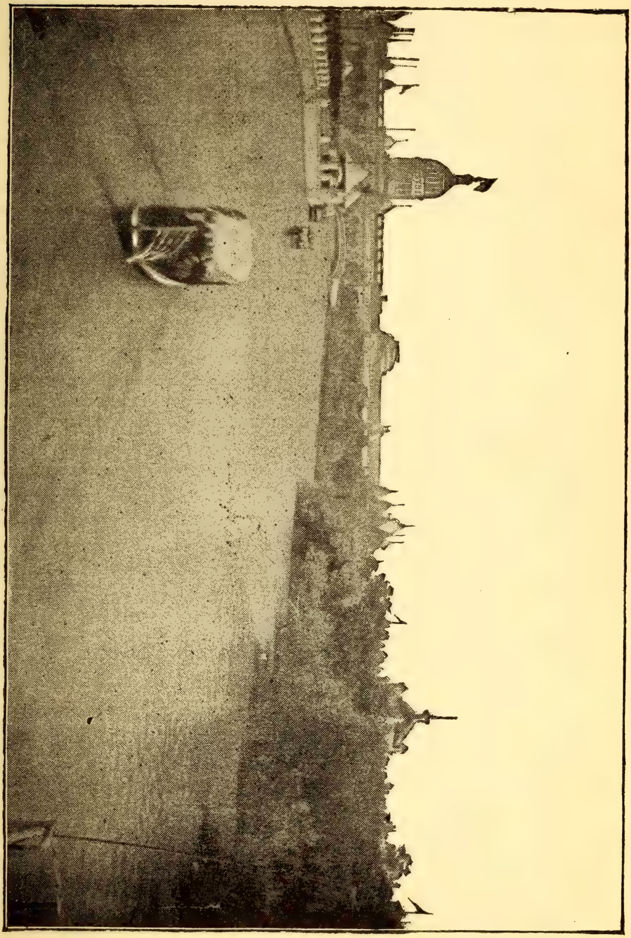
The World's Fair eclipsed all other enterprises in the mind of every American during the year 1893. The Exposition was expected to represent the highest achievement in art, science and industry, and it was built upon a stupendous base. But the very boldness and vastness of the undertaking seemed to disparage the individual and minor exhibits. It was essentially an engineering and architectural triumph, the culmination of the great constructive or inventive movement which has been a distinctive mark of the century. The Exposition will probably live longest in history in its vast framework, architectural splendors, the transcendent beauties of its lagoons, and the many organized movements which sprung from it. It will linger in the minds of those who saw it as a fascinating dream, becoming unreal and glorified as the years pass on. The multitudes who passed under its inspiration must have gone their ways with a new and enlarged sense of the greatness of human institutions, and a keener appreciation of all those agencies which are making for the brotherhood of the race.

With so much to admire, it seems ungracious to offer criticisms of any of the integral parts of the Exposition; but it is true that some of these departments and bureaus did not properly or adequately represent the subjects with which they were charged, and this was true with various lines of exhibition which fell to the care of the Department of Horticulture. The reasons for these faults in this department were various. In the first place, the classification of the department was unnatural and unfortunate, the management was rent by personal dissension, and some classes of horticulturists made no effort towards an exhibition. The soil in which the outdoor plants had to be grown was generally poor, and the season was very dry; and most of the exhibits of living plants were set in their quarters in the spring of 1893, and were therefore not sufficiently established to make the best exhibit. The effect of haste in preparing for the Fair was probably nowhere more apparent than in the horticultural department, where all growing exhibits should have been established as early as 1892. Yet the horticultural exhibits, as a whole, far exceeded, in interest and variety, anything before attempted in this country, although their value, especially in the displays of growing plants out of doors, was often greatly depreciated from a lack of suitable labels. The pomological displays were creditable to the fruit interests of America, but the floricultural exhibits, while excellent in certain groups, were not a true index of the state of the industry in this country, nor of the best taste in ornamental gardening; while the great vegetable and nursery interests were very imperfectly represented. Few other nations made attempts towards horticultural exhibits at all commensurate with the importance given to displays of other products. Canada, Germany, France and Japan made the leading foreign displays, the three last having rather extensive areas of growing plants. The only other countries making displays of fresh fruits or growing plants were, New South Wales with interesting collections of apples, lemons and oranges, and a few pears; Russia with a unique collection of apples from storage; and Mexico, Belgium, Holland, Austria, and one or two English firms, with displays of ornamental or useful plants. The countries represented in the Department of Horticulture, in various preserved products, appliances and charts, aside from wines, were Austria, Belgium, Ceylon, Denmark, Germany, Great Britain, Greece, Italy, Jamaica, Japan, New South Wales, Norway, Sweden.

1. LANDSCAPE GARDENING AT THE FAIR.

Those portions of the World's Fair which were of particular or technical interest to the horticulturist belong to two great groups,—the landscape gardening features, and the Department of Horticulture proper. The landscape gardening of the Fair, so far as it related to the fundamental conception and design of the grounds, was the work of Olmsted, Olmsted and Eliot, and was entirely independent of the horticultural department. Certain minor planting in the interior of the wooded island and about the Horticultural and Woman's Buildings was in immediate charge of the Bureau of Floriculture of the Department of Horticulture.

The General Landscape Features of the Exposition exceeded in boldness, originality and artistic merit anything heretofore attempted in the New World, and the effort must stand with the masterpieces of the world. The central idea was the grouping of the main buildings and plazas about water axes, which should afford long perspectives and brilliant reflections, and should allow of the most varied planting and the greatest license of color and movement in water-craft and fowl. The



LAGOON IN FRONT OF THE HORTICULTURAL BUILDING, LOOKING NORTH. WOODED ISLAND ON THE RIGHT. ILLINOIS STATE BUILDING IN THE DISTANCE AT THE LEFT. DOME OF FINE ARTS BUILDING IN THE CENTER.

bright blue water from Lake Michigan, which filled the lagoons, was of itself a most fitting setting and complement to the white and graceful architecture, and it emphasized the importance of the architectural masses by disassociating the vision from the earth and creating what landscape gardners know as aerial perspective. The height and importance of the larger buildings were further emphasized by the terraces or esplanades, which set the structures well above the canals, upon which they seemed to rest. These terraces joined the lagoon by a perpendicular wall of white staff, and the approaches were always architectural in design; these retaining-walls were, therefore, essentially parts of the buildings which they supported, and upon this fact rested their great service in the general design. Yet this terrace feature does not appear to have been in the minds of the architects when the first perspectives were made, for the earlier sketches of the buildings show them upon flat surfaces, and the minor reliefs are improvised foliage rather than architectural bases.

It was designed that the central portion or core of the grounds should comprise a quiet and verdurous park, with a glade-like or meadowy interior and an intricate water border. The shores of this wooded island were incomparably good, and upon them, alone, the landscape gardeners could rest their fame with perfect safety; but the interior of the island was pressed into service as a show-ground, and its landscape value was almost wholly destroyed.

The Shores of the Island were clothed with native plants in the main. At least, the effect of the planting was native, both in plants and method, and most of it was so well done that one could scarcely be made to believe that the mass had been evolved from barren sand within two years. "Altogether," Mr. Olmsted writes, "we have planted on the shores of the lagoons one hundred thousand small willows; seventy-five large railway platform carloads of collected herbaceous aquatic plants, taken from the wild; one hundred and forty thousand other aquatic plants, largely native and Japanese irises; and two hundred and eighty-five thousand ferns and other perennial herbaceous plants. The whole number of plants transplanted to the ground has been a little over a million."*

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*For a sketch of the plants used upon the shores, see article by J. G. Jaek in *Garden and Forest*, vi. 419.

A full account of the genesis of the Exposition Grounds, by Frederick Law Olmsted, will be found in the *American Architect*, xli. 151.

2. DEPARTMENT OF HORTICULTURE IN GENERAL.

Classification of Horticulture.—The World's Columbian Exposition was divided into twelve great and coördinate branches or departments, of which horticulture was one.[*] It was a matter of pride and congratulation that horticulture was thus accorded its rightful place as a leading source of interest and wealth. The Department of Horticulture was itself divided into three coördinate bureaus,—Pomology, Floriculture and Viticulture. This division was unjust because it separated viticulture from pomology, of which it is rightfully a part,[†] and it included the wine and brandy interests in horticulture, while they belong with manufacture. In fact, the management was so liberal in the viticultural group that mineral waters were admitted to the floor. The aggrandizement of the wine interests in the schedules was the source of much opposition to the organization of the horticultural department in the time preceding the appointment of its officers, and when public opinion upon matters concerning the Fair was forming; and it is doubtful if the evil effects of the first provisional classification —which was improved in the final scheme—were ever outgrown. The organization of the Department was also faulty in not recognizing the vegetable or truck-gardening interest as coördinate with the other bureaus, particularly as it is of greater economic importance than floriculture. The result of this oversight was an almost entire absence of good vegetable exhibits, with the two exceptions of a remarkably full exhibit extending through the season made by the New York State Experiment Station, and a large display of stored vegetables from Canada in the early days of the Exposition.[‡] For purposes of exposition, the nursery and general tree interests should have been recognized as of coördinate importance with other bureaus, particularly because of the interesting and decorative displays which they are capable of making in the open ground. The tree interests were not only insufficiently represented, but the displays were so widely scattered and so differently planted that much of the comparative effect was lost. But the most serious omission in the entire department was in the vegetables, of which but one species—a sorry hill of the Japanese climbing cucumber—was growing upon the Fair grounds, and in which the staged displays were extraordinarily meagre.

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[*] Department A, Agriculture. B, Horticulture. C, Live Stock. D, Fish and Fisheries. E. Mines and Mining. F, Machinery. G, Transportation. H, Manufactures. J, Electricity. K, Fine Arts. L, Liberal Arts. M, Ethnology.

[†] For a discussion of the classification of horticultural interests, see Annals for 1891, 125.

[‡] For an account of these Canadian exhibits, see *Garden and Forest*, vi. 269.

Classification of Exhibits.—The classification of the exhibits did not follow the classification or division of the department, however, for while the latter comprised but three branches, the displays were distributed under seven coördinate groups. These groups, designated as numbers 20 to 26 in the Exposition records, are as follows:

GROUP 20.—*Viticulture, Manufactured Products. Methods and Appliances.*

Class 119. The vine and its varieties—shown by living examples, by cuttings, by engravings, photographs, etc.
Class 120. Methods of planting, staking, and training the vine.
Class 121. Vineyards and their management.
Class 122. Grapes for the table.
Class 123. Grapes for wine-making.
Class 124. Grapes for drying—Raisin grape culture.
Class 125. Methods of and appliances for cultivating, harvesting, curing, packing, and shipping grapes.
Class 126. White wines.
Class 127. Red wines, clarets, Zinfandel, Burgundies.
Class 128. Sherries, Maderia, Port.
Class 129. Sparkling wines.
Class 130. Methods of expressing the juice of the grape; of fermenting, storing, racking, bottling, and packing. Wine cooperage.
Class 131. Brandy of all kinds; methods and apparatus for the production of brandy.
Class 132. Literature, history, and statistics of viticulture.

GROUP 21.—*Pomology, Manufactured Products. Methods and Appliances.*

Class 133. Pomaceous and stone fruits—pears, apples, plums, peaches, nectarines, apricots, cherries, etc.
Class 134. Citrous fruits—oranges, lemons, limes, shaddocks, etc.
Class 135. Tropical and subtropical fruits—bananas, pineapples, guavas, mangoes, sapodillas, tamarinds, figs, olives, etc.
Class 136. Small fruits—strawberries, raspberries, blackberries, gooseberries, currants, etc.
Class 137. Nuts—almonds, pecans, chestnuts, filberts, walnuts, etc.
Class 138. Casts and models of fruits; imitations in wax, etc.
Class 139. Dried and evaporated apples, peaches, pears, and other fruits. Prunes, figs, dates, etc., in glass or boxes.
Class 140. Fruits in glass or cans, preserved in syrup or alcohol.
Class 141. Jellies, jams, marmalades.
Class 142. Fruits glacéd.
Class 143. Cider, perry, vinegar and expressed juices of berries.
Class 144. Methods for crushing and expressing the juices of fruits and berries. Apparatus and methods of desiccating; apparatus for making vinegar, etc. Cider mills and presses.
Class 145. Methods for preserving all fruits by cold storage or chemical appliances; their keeping, packing and shipping.
Class 146. Literature, history and statistics.

GROUP 22.—*Floriculture.*

Class 147. Roses.
Class 148. Carnations.
Class 149. Orchids.
Class 150. Rhododendrons, azaleas, etc.
Class 151. Chrysanthemums.
Class 152. Dahlias, gladioluses; etc.
Class 153. Ornamental bulbous flowering plants. Hyacinths, narcissus, etc.
Class 154. Pelargoniums, zonal and show.
Class 155. Bedding plants and flowering annual plants.
Class 156. Climbing plants.
Class 157. Perennials and flowering shrubs not otherwise specified.
Class 158. Miscellaneous annuals, phlox, asters, etc.
Class 159. Palms.
Class 160. Ferns.
Class 161. Ornamental leaf plants.
Class 162. Cactaceæ.
Class 163. Aquatic plants.
Class 164. Native wild plants and flowers.
Class 165. Ornamental grasses and reeds.
Class 166. Rare exotic plants.
Class 167. Cut flowers. Floral designs, pressed flowers, leaves, seaweeds and bouquets.
Class 168. Plants grown for commercial purposes.
Class 169. Receptacles, for plants, flower pots, plant boxes, fern cases, tubs, jardinieres, plant and flower-stands, ornate designs in flower-stands.
Class 170. Literature, history and statistics.
Class 171. Miscellaneous.

GROUP 23.—*Culinary Vegetables.*

Class 172. Leguminous, cereal and fruit-like vegetables. Beans, peas, okra, peppers, tomatoes, cucumbers.
Class 173. Radicaceous and tuberous vegetables. Beets, turnips, carrots, potatoes, radishes, etc.
Class 174. Vegetables cultivated for their leaves and sprouts. Cabbage, lettuce, rhubarb, spinach, endive, asparagus, etc.
Class 175. Miscellaneous culinary vegetables not included in the above.
Class 176. Vegetables dried or in cans or glass.
Class 177. Pickles, champignons, truffles, chutney, mustard, etc.
Class 178. Methods for preserving vegetables by cold storage or chemical appliances, their keeping, packing, and shipping.

GROUP 24.—*Seeds, Seed Raising, Testing, and Distribution.*

Class 179. Display of vegetable and flower seeds, grown in different latitudes.
Class 180. General display of flower and vegetable seeds by seed houses or growers.
Class 181. Methods of growing, harvesting, and preparing flower, vegetable, tree, and shrub seeds.
Class 182. Seed warehouse, methods of burnishing and packing for the retail trade. Work of packing, etc., in operation.
Class 183. Methods of testing vitality of seeds, as practiced by different seed houses.
Class 184. Tree and shrub seeds, and seeds used for condiments and medicines.

GROUP 25.—*Arboriculture.*

Class 185. Ornamental trees and shrubs. Methods of growing, transplanting, etc.

Class 186. Fruit trees and methods of raising, grafting, transplanting, pruning, etc. Means of combating insects and other enemies.
Class 187. Nurseries and the nursery trade.

GROUP 26.—*Appliances, Methods, etc.*

Class 188. Hothouses, conservatories, methods of construction, management and operation.
Class 189. Heating apparatus for hothouses and conservatories.
Class 190. Seats, chairs and adjuncts for the garden and conservatory.
Class 191. Ornamental wire-work, trellises, fences, borders, labels for plants and trees, etc.
Class 192. Garden and nursery administration and management. Floriculture and Arboriculture, as arts of design and decoration. Laying out gardens, designs for the laying out of gardens, and the improvement of private residences. Designs for commercial gardens, nurseries, graperies; designs for the parterre; treatment of water for ornamental purposes; cascades, fountains, reservoirs, lakes; formation and after-treatment of lawns. Garden construction, building, etc. Rock-work grottoes; rustic construction and adornment for private gardens, and public grounds. Planting, fertilizing, cultivating, and appliances.

Extent of the Department.—The Department of Horticulture was located upon the western side of the Exposition grounds. Its equipment comprised a building 1000 feet long and 250 feet in extreme width, with a magnificent glass dome. This building, described more fully in the following pages, was undoubtedly the most pretentious structure yet erected for horticultural exhibitions. In the rear of the great building, auxiliary greenhouses aggregating about 25000 square feet of glass were erected "for recuperating injured plants, and for developing them to a high degree of perfection before placing them on exhibition." These houses were also used for propagating stock used in the decorative features of display. Two or three acres of ground immediately surrounding the horticultural building were devoted to displays of bedding plants, appliances, and greenhouses, the latter also used, by consent of their owners, for various competitive collections of plants. A space of some acres was set apart at the western end of the Midway Plaisance for nursery exhibits, and it was expected that nursery work would be in full operation throughout the Exposition; but exhibitors objected to the location as being too remote from the central attractions of the Fair, and the space was given up. A small area of two and a half acres near the eastern end of the Plaisance was substituted, and late in the spring of 1893 a variety of nursery stock from France, Mexico, and from a few American firms, was set upon that half of the area lying to the south of the main promenade, and upon the other half California planted an orange grove and a collection of interesting trees and shrubs. Long before the

Exposition opened, it became apparent that more space must be provided for plantations of ornamental plants, and the interior of the wooded island was secured for the purpose. The landscape department relinquished its charge of this interior space, amounting to about a dozen acres, and maintained control of that portion only which lay outside the boundary walk, and which was concerned in the decoration of the shores. The Japanese building and part of its garden exhibit were placed at the northern extremity of the island. So it came that the island, which was designed as a homogeneous park, became, under the force of circumstances, divided between two or three somewhat opposing interests.

The Officers of the Department of Horticulture were as follows: J. M. Samuels, Kentucky, chief; John Thorpe, New York, Superintendent of the Bureau of Floriculture; H. M. La Rue, California, Superintendent Bureau of Viticulture; Charles Wright, Delaware, Superintendent Bureau of Pomology, and in charge of nursery exhibits, except those upon the wooded island.

The Horticultural Building.—The great horticultural building comprised a central dome area from which extended, in each direction, two parallel curtains or wings, which connected the dome with two end pavilions, as shown in the ground plan on page 105. Between the curtains, on either side of the dome, was a court, one of which, K, was devoted to the California orange orchard, and the other, I, to the German Wine Building and lily-tanks. The dome and the two front wings or curtains were devoted to ornamental plants, while the rear wings were devoted to fruit displays. The dome was 187 feet in diameter, and had an inside altitude of 113 feet, while each of the front curtains was 270 by 69 feet in floor area. The sides and roofs of all these curtains were of glass. In fact, these wings were simply gigantic greenhouses of sufficient height to accommodate tall palms and bamboos; or in the rear wings, the glass was shaded with drapings, a board floor was laid, and the space was used for the fruit exhibits, much after the manner of the ordinary County or State fair. The floor of the dome and front curtains was covered with cinders. This proved to be a very poor material for the purpose, being dirty and unpleasant to walk upon; its dull color was also objectionable among plants. In these great greenhouses many thousand plants were arranged in various fashions, a great number in pots and some bedded out.

The pavilions at the two ends, uniting the two parallel wings or curtains, were each 117 by 250 feet, and of two stories. In the upper story in each pavilion was a restaurant occupying about half the space. All the remaining space of the south pavilion was devoted to wines and brandies, with a flavor of mineral water, and as these are not horticultural objects they will not be further discussed in this volume. The north pavilion was used below for seeds, implements, and commercially preserved fruits, and also the few vegetable exhibits. The second floor was devoted to canned goods, nuts, charts of garden designs, and a few prunes and raisins.

A gallery in the dome afforded a broad floor space for the display of miscellaneous exhibits, particularly herbaria, charts, photographs, and an interesting collection of Japanese pots and models of fruits and vegetables. The officers of administration of the Department were in the second story communicating with this dome gallery.

The Awards System.—The awards system and the prohibition to make photographs within the grounds, were the two features of the great Fair which seemed to receive most criticism and censure. But while the photograph embargo was generally conceded to have been unjust, the system of making the judgments and awards was probably correct, if not ideal, in itself, but its operation was attended with so many abuses that the findings will be distrusted in some cases. The plan of making awards was the one-judge system, which has become familiar to most Americans within the last few years. The Board of Judges was designed to be divided into twelve or thirteen committees, upon the basis of the classification of the main features of the Fair itself. These committees comprised a varying number of "competent experts," who were assigned to certain lines of exhibits, one member, alone, to report upon each exhibit. The finding of this individual was presented to the committee, which, in turn, submitted the report to the Executive Committee on Awards,* which was the organic head of the entire scheme. While the original judgment, therefore, rested upon the opinion of a single person, the final endorsement was made by a full Committee, to which, of course, any exhibitor could appeal, through the Executive Committee. Those who are familiar with the single-judge system, when properly inaugurated, know that it is expeditious, and that the judge, knowing that the entire responsibility falls upon himself, is exceedingly cautious in making his decisions. Unfortunately, the foreign exhibitors were not familiar with the system, and they objected to it from the first; and the controversy, coupled with bad features in management, has left a most unfortunate impression of the justness of the Exposition.

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*Executive Committee on Awards: John Boyd Thacher, Chairman, Albany, N. Y.; W. J. Sewell, New Jersey; A. T. Britton, District Columbia; A. B. Andrews, North Carolina; B. B. Smalley, Ex-Officio Member, Burlington, Vt.

Three independent juries were assigned to the Department of Horticulture: One on Pomology, which also had jurisdiction over implements, greenhouses, vegetables and seeds; Floriculture, and Viticulture. The constitution of the juries was as follows:

Jury in Pomology, etc.—W. H. Ragan, Indiana, clerk. E. F. Babcock, Arkansas, B. Starret, Nova Scotia, pomaceous fruits; E. S. Hubbard, Florida, G. I. Motz, Alabama, stone fruits; C. W. Garfield, Michigan, small fruits, grapes and cherries; R. H. Warder, Ohio, vegetables; A. B. Hawkins, nuts; P. Zanon, Italy, citrous fruits; T. Pugh, New South Wales, fruits in liquids; Mrs. R. S. Wallace, jellies and jams; Mrs. Anna B. Nickels, Mexican fruit models, jams and jellies; Dr. L. Wittmack, Germany, seeds and literature; W. H. Manning, Massachusetts, nursery stock and landscape gardening plans; Sylvester Johnson, Indiana, horticultural implements and appliances, greenhouses; C. Ricchiardi, Siam; G. B. Brackett, Iowa, nomenclature.

Jury in Viticulture.—H. E. Sr. Don E. Dupuy de Lome, Spain, president; S. Coblenz, Germany, first vice-president; Tommaso Silombra, Italy, second vice-president; Vicente Vera, Spain; Juan Vilardell, Spain; J. M. do Onteiro Ribeiro, Portugal; Albert Sturm, Germany; Emile M. Blum, Bolivia; Thomas Pugh, New South Wales; M. B. Federoff, Russia; Julius A. Schuller, Indiana; Crittenden Collins, Kentucky; Charles Cavaroc, Louisiana; Charles McLoeser, New York; Romialdo Pacheco, California; George W. Campbell, Ohio; T. Madliner, Illinois; A. Le Duc, Louisiana; E. Du Bois, Florida; Mr. Compton, Missouri; Mr. Tobias, Pennsylvania.

Jury in Floriculture.—Henry Holzapfel, Jr., clerk. Henry Pfister, Washington, D. C., primulas, cinerarias, cyclamens, aquatics; Robert Craig, Philadelphia, rhododendrons, roses, annuals (in part); W. H. Manning, Massachusetts, herbaceous plants; Ernest Krelage, Holland, bulbous plants; Dr. L. Wittmack, Germany, herbaria, floral designs, photographs, fungi, literature, miscellaneous; Dr. Guzman, Guatemala, orchids; Sen Tsuda, Japan, Japanese plants; George Nicholson, Kew, England, palms, cacti, and stove and house plants; Mrs. Louise Boisen, Indiana, herbaria and other horticultural or botanical exhibits in Woman's Building; Mrs. James Duke, Florida, Mexican nursery exhibit, and displays in the Agricultural Building from Cape Colony; William Hamilton, Pittsburgh, Pa., pansies; Fred. Kanst, Chicago, calceolarias, azaleas, cannas, gloxinias, tuberous begonias, and other flowers; William R.

Smith, Washington; Ludwig Schiller, Germany, substitute for Dr. Wittmack, upon the latter's departure.

Permanent headquarters were established in the Horticultural Building for these three juries. The labor of judging the multitude of exhibits began in June, or earlier in special cases, and continued throughout the Exposition, although the formal organization of the juries was delayed until midsummer. Each jury made for itself whatever regulations it found necessary to facilitate its business, although the jury on Pomology was probably the only one of the three which formulated any definite rules. This jury modified the rules on awards of the American Pomological Society to meet its needs, as follows:

"Rule 1—In estimating the values of collections of fruits, judges are instructed to base such estimates strictly upon the varieties in such collections which shall have been correctly named by the exhibitor prior to action thereon by the Committee on Nomenclature.

"Rule 2—In estimating such values, judges are instructed to consider: 1st, the value of the varieties for the purpose to which they may be adapted; 2nd, the color, size and evenness of specimens; 3rd, their freedom from the marks of insects and other blemishes; 4th, the apparent carefulness in handling and the taste displayed in the arrangement of the exhibit.

"Rule 3—No comparison shall be made between any two exhibits, but each must contend against a standard of supreme excellence.

"Rule 4—Judges are instructed to apply the principles enunciated in above rules to entries of single varieties."

Aside from this general code, adopted by the jury, some of the judges adopted a fixed scale of points for their individual use. The jurors considered the following schedule of points in judging collections of pomaceous fruits: Adaptability, size, form, color, evenness, blemishes, handling, maturity, arrangement, quantity. The following attributes were considered in judging varieties of stone fruits: Size, form, color, tissue, pit or seeds, juice, sweet or dessert, acid or cooking, maturity, flavor.

The awards are to consist of bronze medals which are to be "works of art," to be accompanied by parchment diplomas, on which shall be formulated the "specific points of excellence presented by the exhibit receiving the award." These medals and diplomas are given by authority of Congress, and are prepared by the Secretary of the Treasury.

Aside from this material result of the examination of exhibits, each of the juries is to "present a comprehensive report . . . embodying the principal educational and interesting features of the groups and classes composing that department, accompanied by a list of exhibitors who have received awards, with the reports of the individual judges giving the reasons and considerations therefor." These reports, together with the full and final reports of the chiefs of the departments, shall constitute the history of the Exposition.

A Judge's Opinion.—So much has been said against the single-judge system at the Exposition, that any inside light which may be thrown upon it will be welcome and valuable in future enterprises of a similar character. The following criticisms are prepared by Warren H. Manning, who was a member of two of the juries in the Depatment of Horticulture, and who is therefore well qualified to speak understandingly of the subject.

"I believe that there is merit in the single jury system, that a single juror who is a competent expert, is better able to pass a correct judgment independently, than if he were open to the direct influence of other less competent men who were more self assertive and stronger willed than himself; and that the opportunity for illegitimate influences is no greater with a single juror than with a number of jurors. But it was evidently a mistake to attempt to apply a theory, which had never been worked out on a large scale in actual practice, to an affair as extensive as the World's Columbian Exposition, especially as there was not time to thoroughly plan and organize a system. No better service can be done to help establish that which is meritorious in the single jury system than to point out defects that were apparent.

"The theory was, that a single expert juror was to make an examination of each exhibit assigned to him, and with respect to those deemed worthy of an award he was to 'formulate in words the specific points of excellence or advancement disclosed thereby.' He was to present his report to the jury (made up of all the jurors of the department or division) at some later period, which would confirm his findings, and forward his report in writing, or reject them and have a new examination and report made by another juror, or, in the event of further disagreement, by a special committee appointed by the Executive Committee of Awards, and as a last resort by the departmental jury.

"This plan of proceedure was manifestly impracticable in the horticultural department where so many displays were of perishable flowers or fruits which could not be replaced, many of which had disappeared long before the jury had assembled. It would have required a practically continuous session of the jury from January to November, 1893, for judgment was passed upon exhibits of flowers and plants during the first month, and there were continuous exhibits of fruits through the full term of the Exposition. The Horticultural and Floricultural jury did not organize, however, until the last of July.

"While the jurors were officially instructed more than once, after the jury had been organized, to grant awards only to articles of superior merit, and the printed instructions to the jurors stated that 'awards shall be granted upon specific points of excellence or advancement formulated in words by a board of judges or examiners, who shall be competent experts,' there was no means provided for determining a standard (excepting a memorandum for fruits, without an official imprint) on which a juror could base a report so that the awards should have anything like uniformity. It was unreasonable to expect that the jurors, many of whom were obliged to make their examinations independently and long before the organization of the jury, would be able to arrive at anything like uniform conclusions. The result was that when the reports were presented to the jury they varied so radically that a considerable amount of time was wasted in bringing them to something like a uniform basis, and in order to make any progress it was necessary to submit to what appeared to many to be essentially wrong decisions. To expect all members of a jury, including foreigners and men who were not accustomed to expressing their ideas in writing, to make a clear and concise written statement of the merits of the different exhibits of the same character, so that this form of award would be of value, was hardly practicable, and to expect a clerk to work over their statements (or supply a statement) was even less practicable.

"To select a lot of jurors without knowing if experts were represented, for all classes of exhibits, and then to send them, without notice, at irregular intervals, to the chief clerks of the juries who were expected to assign them to duty, and when the exhibits they were most competent to judge were, perhaps, already assigned to others,—this was certainly not the best way to secure the most expert judge for each class. When almost every rule for the entry of exhibits was violated, and the judges were obliged to hunt over acres of ground to find an exhibit, then, very likely, make extensive corrections in the list of articles, and supply many missing names, it became an exceedingly difficult matter to pass correct judgment. In addition to this lack of a standard for comparison and of a properly organized and executed system, judges were expected to sign, in duplicate, a card for each item in an exhibit; but when the jurors realized that some of them were likely to be compelled to sign their names six thousand times for one display alone, there was a rebellion. The jurors finally prepared a report, and signed a card that would include all items.

"It was the purpose of the Executive Committee of Awards to have the exhibitors in all cases (in horticulture at least) make a list showing every species and variety in their display, so that in the future the records would show just what varieties were displayed; this was a most excellent purpose. In accomplishing this purpose the exhibitors were expected to make their entries of all species and varieties on entry blanks, these entries were to be copied into a book in the department office, again into a book, with consecutive numbers, in the office of the Executive Committee, then each item was to be copied twice on a card with a number corresponding to the Executive Committee's book! One can well imagine that, in going through this process, the little errors in a botanical name in the original entry would be amplified until the result would be unintelligible.

"To secure just awards, more rigid lines must be assumed between entries for the different departments, so that articles will not come into the hands of judges who are incompetent to pass upon them. A complete set of jurors, with information as to the branches in which they are expert, should be provided in advance, so that they may be assigned to duty at an early period. Carefully prepared rules to guide jurors in their findings should be prepared to cover, so far as possible, all classes of exhibits. The system of entries and the directions to jurors should be simple, feasible, and rigidly enforced, and all unnecessary labor should be avoided. In conclusion, let me suggest that if it were possible to have the Executive Committee of Awards of the Exposition, the heads of departments, the clerks of juries, and the best experts among the judges of the various groups, jointly prepare a system of entries, awards, and a classification that could be referred to and studied as a standard for future expositions, the result would be of inestimable value."

Staging the Fruit Exhibits.—The general plan of showing green fruits is indicated in the following rule of instruction given to exhibitors: "The fruit exhibit will be made on raised or terraced tables. Those next to the wall will be four feet in width. They will consist of seven shelves, the first or lower one being eight inches, the five succeeding ones seven, and the last eleven inches in width. The upper surface of the lower shelf will be three feet above the floor, and each succeeding shelf will rise three inches. The central tables will be built after the plan of the side tables, but will rise from each side toward the center, and will be six feet and one-half in width, with six shelves on either side. Additional shelves will be erected against the walls above the side tables and over the center of the interior tables, for fruits preserved in solutions, etc. Fruits of ordinary size, as the apple and pear, will be exhibited on plates seven inches in diameter. Those of unusual size and irregular form will be exhibited on appropriate plates or stands, according to their special requirements."

This arrangement was not carried out uniformly, and the exhibitors were allowed some freedom in design of tables and cupboards, but the terraced shelves were employed in the main.

The Amount of Specimen Fruit demanded by the rules was as follows:

"Fruits and other articles in this group [No. 21, Pomology] will be displayed in not less than the following numbers and quantities: Grapes, three bunches of any one variety; apples, quinces, shaddocks, pomegranates, and cocoanuts, four each; pears, oranges, and lemons, five each; peaches, mangoes, Japan persimmons, sapodillas, avacadoes, and star apples, six each; apricots, nectarines, plums, limes, guavas, and figs, ten each; bananas, one hand; dates, one bunch; cherries, olives, coffee, strawberries, raspberries, blackberries, gooseberries, cranberries, and other small fruits, one pint each; citrons, pineapples, papaws (*Carica Papaya*), and cherimoyers, three each; tamarinds, almonds, pecans, Madeira nuts, chestnuts, Brazil nuts, filberts and other nuts, one pound each; glacéd fruits, figs, raisins, prunes, apricots, peaches, dates, pears, apples, and other dried fruits, not less than one nor more than twenty pounds each, and, when possible, in commercial packages. Fruit casts, models and imitations in wax, from one to four each; fruits in glass preserved in solutions, one jar each; jellies, jams and marmalades, one sample each; cider, perry and expressed juices of berries, and other fruits, one bottle each; machinery, apparatus, mills, presses, implements, tools, etc., one sample of each design."

"Grapes [Group 20] must be exhibited in quantities of not less than three bunches of any one variety; raisins, not less than one pound of each brand, and as far as possible in commercial packages." The awards to fruits were as follows:

GROUP 21.

CALIFORNIA.—Fruits in solution—Lusk & Co., San Francisco, two awards; State of California.

Fruits in syrup in tin and glass—J. H. Flickinger Co., San Jose.

Canned fruits—Southern California Packing Co., Los Angeles.

Orange marmalade—State of California.

Jams, jellies, etc.—San Jose Fruit Packing Company.

Orange wine—Bishop & Co., Los Angeles.

Glaced fruits and fruit pulps apples, crop of 1892—John Rock, Niles; Lompoc valley, Lompoc; State of California.

For lemons—M. N. Gulick, Tustin; S. M. Marshall, El Cajon; E. W. Jenney, Helix; Clark Bros., Helix; G. W. Garcelon, Riverside; E. M. Hatch, Ontario.

For oranges and display of oranges—Los Angeles county; Scott Chapman, San Gabriel; E. W. Holmes, Riverside; J. Jarcow, San Gabriel; E. S. Thatcher, Ventura; J. L. Gordon, Azusa; A. C. Rogers, Azusa; William Chapenfels, Duarte; John Scott, Duarte; A. D. Bishop, Orange; S. La Rue, Riverside; G. W. Garcelon, Riverside.

General citrous fruit collections—San Bernardino county; Ventura county; San Diego county; San Diego; H. K. Snow, Tustin; Orange Company, Santa Ana; Land and Town Company, San Diego; C. T. Eaton, Santa Barbara; R. W. Meacham, Riverside; State of California; Los Angeles county; Riverside county; S. M. Marshall, El Cajon.

For stone fruit—State of California.

For displays of nuts—George Ford, Santa Ana; A. T. Hatch, San Francisco; Los Nietos & Ranchito, Rivera; John Rock, Niles; Walnut Growers' Association, Rivera.

For dried fruit—Riverside Fruit Company; Santa Clara; Lewis Falker, Ventura; Mrs. J. C. Joflin, Tustin; B. F. & L. E. Allen, Chico; M. Reidy, Escondido; H. Culbertson, El Cajon; W. H. Ferry, Lakeside; W. R. Walker, Pasadena; C. C. Thompson, Duarte; S. H. Barrett, San Bernardino; C. P. Barrow, San Bernardino; R. F. Cunningham, Highland; Mary A. Davis, San Bernardino; J. H. Flickinger, San Jose; O. & G. Handy, Orange; T. J. Miller, Beaumont; Saratoga Packing Company, Saratoga; Fresno County World's Fair Association, Fresno; Santa Barbara county; Dr. Myers, San Bernardino.

Miscellaneous—L. E. Allen, San Diego, guava jelly, preserved figs, etc.; John Rock, Niles, cherries in variety; State of California, trees in orchard; A. Lusk & Co., San Francisco, asparagus in tin and glass; Sonoma Preserve Company, Petaluma, assorted pickles and sauces; S. J. Murdock, Westminster, vegetables in solution; W. R. Baker, Pasadena, dried or condensed vegetables.

WASHINGTON.—State of Washington, Olympia; Dr. N. G. Blalock, Walla Walla; Joseph Braden, Walla Walla; E. M. Arils, Walla Walla.

IOWA.—State of Iowa; State Horticultural Society; Mills County Horticultural Society, Glenwood; J. L. Budd, Ames; A. F. Coleman, Corning; M. E. Hinkley, Marquis; G. B. Brackett, Denmark.

COLORADO.—State of Colorado; Women of Colorado, Denver; W. S. Coburn, Delta county; Samuel Wade, Delta county; W. B. Felton, Canon City; John Lock, Canon City; G. S. McGranahan, Colorado.

NEW YORK.—State of New York; Henry Lutts, Youngstown; Smith & Sons, Geneva; Jacob Moore, Attica; Ellwanger & Barry, Rochester; George T. Powell, Ghent; Central Horticultural Society, Syracuse; Western Horticultural Society, Rochester; Brockport Union Agricultural Society, Brockport; Orange County Agricultural Society, Montgomery; Orleans County Agricultural Society, Albion; State Experiment Station, Geneva; Brocton Wine Cellars, Brocton; Gordon & Dilworth, New York; L. J. Farmer, Pulaski; Michael Doyle & Co., Rochester; G. C. & W. C. Snow, Penn Yan; Brocton Wine Company, Brocton; C. J. Baldridge, Kendaia; Curtice Brothers Company, Rochester; Genesee Fruit Company, New York.

MINNESOTA.—State of Minnesota; O. M. Lord, Minnesota City; D. Cook, Minnesota City.

ARKANSAS. — State of Arkansas; Washington county; Johnson county; Fulton county; Benton county; W. G. Vincenheller, Little Rock.

OREGON.—C. E. Haskins, Newberry; Dr. G. R. Cardwell, Portland; Eagle Valley Horticultural Society; Max Pracht, Ashland; G. W. Cochran, Eugene.

WISCONSIN.—State of Wisconsin; A. L. Hatch, Ithaca; S. J. Freeborn, Richland Center; Sauk Company, Baraboo; Cranberry Growers' Association, Baraboo; State Horticultural Society; A. D. Barnes, Waupaca; William Springer, Fremont; Joseph Zett, Sturgeon Bay.

FLORIDA.—Guy J. Metcalf, Juno; Mrs. R. L. Jamieson, Jacksonville; William F. Spurlin, St. Petersburg; J. A. Baird, DeLand.

OHIO.—Hydraulic Press Manufacturing Company, Mount Gilead; P. P. Mast & Co., Springfield.

KENTUCKY.—State of Kentucky; W. B. Samuels, Clinton; W. S. Samuels, Clinton.

ILLINOIS.—State Horticultural Society; Central Illinois Horticultural Society, Champaign.

MISSOURI.—S. W. Gilbert, Thayer; M. F. Murray, Oregon; State Horticultural Society; Olden Fruit Company, Olden; State of Missouri; George A. Deitz, Olden.

NEW JERSEY.—State of New Jersey; William R. Ward, Newark; Horace Roberts, Fellowship; S. S. Voorhees, Keyport.

IDAHO.—State of Idaho; John Hopper, Cameron.

MISCELLANEOUS.—New Mexico Territory; N. Spatcier, Los Cruces, N. M.; P. A. Marcellino, Socorro, New Mexico; State Pomo'l Society, Me.; State of Maine; State of Montana; Grafton Co. Agricultural Society, New Hampshire; B. M. Young, Morgan City, La.; Stuart Pecan Company, Ocean Springs, Miss.; B. Stutzman, Ligonier, Ind.; State of Michigan; State of Nevada; Fruit Growers' Ass'n, Wolfville, N. S.; Albaugh Fruit Co., Fort Valley, Ga.; Mrs. S. Potter, South Haven, Mich.; Division of Pomology, United States Department of Agriculture; A. N. Brown, Wyoming, Del.; Smith & Painter, Wilmington, Del.; State Horticultural Society, Lincoln, Neb.; State of Kansas; State Horticultural Society, Lawrence, Kan.

NEW SOUTH WALES.—G. K. Green; Government New South Wales; J. Purcell; D. Mitchell & Co.; Coleman Brothers; Mitchell & Co.; Mrs. J. A. Faint; J. L. Mitchell; W. Y. Cousins; Alexander Pollock.

GERMANY.—Victor Durfeld; Wilhelm Laaf; Freyeisen Brothers; Adler Schott Brothers.

ENGLAND.—Batger & Co.; Crosse & Blackwell.

SPAIN.—Ricardo D. Pedro; Alcala Giulez & Co.; Hig o Juan Monseriati.

ITALY.—F. S. Ciampa & Sons; Maniscalco Brothers; A. De Felice; Biono; Ruggero; S. Arspano.

MEXICO.—Ferrati Loronellas Tavier del Campo; Gobierno del Jalisca; Gobierno del Michoacan; Bennett & Co.; Gobierno de Sonoro; Estado de Nuevo Leon; Seretario de Fomento; Braulio; Autorided de Tepic; Davilla Ignacio; Stas Farias Hermanos; Dolores de la Rosa ver de Isles; Matuta; Juan Jose; Estato de Michoacan; Serverino Cruz; Junta Expositivo de Pueba; Flores; Adelaida; Carmona; Manuel; Conception R. de Aragon; Romero; Andrea; Suarez Valle; Jose M.; Florentino Gutierre; Antoridan de Tepic.

CANADA.—W. R. Read, C. Atkins, W. Kottimer, Edward Tyhurst, G. W. Clime, William Stewart, W. Warnoch, W. M. Orr, Richard Trotter, Niagara district, Essex district, Gray district, Huron district, Simcoe district, Province of British Columbia, Province P. E. Island, Experimental Farm, J. W. Bigelow, Fruit Growers' Association, George B. Edwards, Missisquoi Horticultural Society, Wentworth district, Bellville and Eastern district, Burlington district, Province of Ontario, A. Vitisa & Co., Province of Quebec, W. Boulton & Son, Ontario Canning Company, W. D. Kitchen, James Sheppard & Sons.

ORANGE FREE STATE.—Mrs. E. Frobler, Mrs. J. Du Prees, Mrs. O. Krause.

MISCELLANEOUS FOREIGN.—A. Thompson, Rei, Chile; Department of Agriculture, St. Petersburg, Russia; John Chysomallis, Calami, Greece; Tigre Packing Company, Buenos Ayres; Government of Siam; Com. of British Guiana; Com. de Para.

The awards in Viticulture were the following:

GROUP 20.

NEW YORK.—State of New York; Charles J. Copeley, Stapleton; Chautauqua County Horticultural Society, Westfield; Urbana Wine Company, Urbana; Pleasant Valley Wine Company, Rheims; Niagara Grape Market Company, Lockport; Chautauqua and N. E. Grape Union, Brocton; Ellwanger & Barry, Rochester; Jacob Moore, Attica; Germania Wine Company, Hammondsport; O. B. Flether, Marlborough; G. E. Ryckman, Brocton; H. A. Holmes, Middlehope; Lewis Roesch, Fredonia; George C. Snow, Penn Yan; State of New York, photographs of vines, methods of training, etc.; W. H. Millspaugh, Branchport; D. M. Dunning, Auburn.

CALIFORNIA.—Escondido Land and Town Co., Santiago; J. P. McFarlan, Dehessa; El Cajon World's Fair Association; Los Angeles county.

Raisins, (Fresno county)—Griffin & Skelley Co.; Noble Bros.; Holt Raisin Co.; O. S. Sheldon; Souther & Crosby; Fresno County World's

Fair Association. (Los Angeles county)—Mr. Allingham. (Sutter county)—J. P. Onstott, two awards; Yuba City; and Sacramento.

For collections of grapes—State of California; City of San Diego; State Horticultural Society; John Rock, Niles; Natoma Vineyard, Sacramento county, three awards.

TEXAS.—A. M. Brunin, Laredo; T. V. Munson, Denison.

WISCONSIN.—William Fox, Baraboo; State Horticultural Society of Wisconsin.

MISCELLANEOUS.—State of Minnesota, State of Michigan, State Horticultural Society of Illinois, State of Nebraska, State of Colorado, State of Idaho, State Horticultural Society of Kansas, State of Missouri, State Horticultural Society of Iowa, State of New Jersey; A. G. Dunlop, Huntington, Oregon.

CANADA.—Niagara district, Burlington district, Wentworth district, Province of Ontario, Central Experimental Farm at Ottawa, Missisquoi Horticultural Association at Frelighsburg.

GREECE.—N. A. Burlumi, Com. of Olympia, Pantagiotis & Bacatzoulos, C. Marcopoulos & Son.

MISCELLANEOUS FOREIGN.—Farm of Bournbat, Smyrna; Ottoman Empire, Smyrna; Wilhelm Grune, Berlin, Germany; Meschini Eugenis, Gallarath, Italy; A. Thompson, Rei, Chile; J. D. Arguimbau, Spain.

The above lists are not official and they may contain errors, but they comprise the preliminary announcements up to the close of the year.

Fruits in Liquids.—A striking feature of the pomological exhibition was the great amount of fruit in glass, in preserving fluids, and the great excellence of very many of the displays. From an educational or pomological point of view this preserved fruit has little merit, for it does not allow of sampling, and its character is more or less artificial. Many of the States used preserving fluids for the purpose of keeping over the fruits of 1892, and the product was replaced by fresh fruit in season.

In some instances, however, notably in the case of California in its State building, this bottled fruit was a conspicuous part of the exhibit till the last; and the Californian fruit was almost uniformly remarkably well preserved. New York, alone, showed edible or canned fruits along with its green fruits, on the floor of the Exposition hall.

Various preparations were used for preserving the fruits. Some of the winter apples were kept until midsummer in pure water, care being taken to replace the water at intervals and to remove all imperfect fruits. Sulphurous acid water was commonly used; also salicylic acid, and probably corrosive sublimate. Preparations recommended by the Exposition in advance of its opening, are as follows:

"*Coal Oil or Kerosene.*—This fluid has been found more satisfactory than any other yet tried for preserving strawberries for exhibition. It is lighter than water, so that the berries sink in the fluid, and their natural form and appearance may thus be well preserved. It has also been found useful for preserving blackcap raspberries. Fruit preserved in this fluid should be free from drops of water (dew or rain) on the outside.

"*A Solution of Boric Acid in Water* (one per cent).—This may be made by dissolving half a pound of boric acid in fifty pounds of water, agitating occasionally until the solution is complete. If the fluid is not clear, it may be allowed to stand and settle, the upper clear portion being poured off and the remainder filtered through filtering paper. This fluid may be used for the preservation of red and black raspberries, blackberries, red and black cherries, black currants, and other red or dark colored fruits, including red apples.

"*A Solution of Zinc Chloride* (two per cent).—This is readily made by dissolving one pound of zinc chloride in fifty pounds of water. Allow the mixture to stand, pour off the clear fluid, and filter the remainder. When poured on the yellow varieties of raspberries, this fluid has been found to preserve their color well. It is also recommended for the preservation of red and white currants, gooseberries, white or yellow cherries, peaches, and other light colored fruits, including green and yellow apples.

"*A Solution of Salicylic Acid* (one dram to the quart).—Dissolve one ounce of salicylic acid in eight ounces of alcohol, and add this to two gallons of water; shake well, and allow it to stand for a short time, when it will be ready for use. This fluid has been found useful for preserving red and dark colored grapes. It may also be used in place of the boric acid solution for the fruits mentioned under that head, although it has not proved quite so successful as the latter."

Recipes for preserving fluids are gived by B. M. Lelong, secretary of the State Board of Horticulture of California, as follows. The author is not informed if the sodium preparation was in use at Chicago.

"The preservatives that have given the most satisfaction are sulphurous acid gas and bisulphite of soda. In preparing the former, many have met with disappointment because of lack of experience required to make it uniformly, by not following the details closely. Those contemplating the preparation of fruit samples, I would advise to procure sulphurous acid, which can be obtained from our wholesale druggists. Mr. Justinian Caire and Messrs. Reddington & Co. of this city, will furnish it in five-pound bottles at 35 cents per pound. Two ounces of sulphurous acid to the gallon of water is the required amount to preserve most fruits. In using the acid, better results will be obtained than by undertaking to make sulphurous acid gas, especially without some experience. Of bisulphite of soda, use Merck's Dry Pure Sodium Bisulphite, obtained from wholesale druggists in pound bottles, costing 65 cents per pound. Use one-half ounce per gallon of water and add four ounces alcohol. The addition of alcohol prevents the fruit from bursting. Pure sodium bisulphite does not deposit, and the solution is applied to the fruit as soon as it is dissolved. To prevent floating particles from going into the jar, the solution should be passed through cloth or filtering paper. Great care must be used not to allow these acids to come in contact with metals of any kind. In using sulphurous acid, the best way is to place the fruit in the glass jar, which must be clean, and fill it with water; after leaving it stand a half hour to allow the air to escape, pour in the acid and cover immediately. In using bisulphite of soda, the required amount should be placed in the glass jar, a half pint of water poured on it, and left standing. The soda will soon dissolve, then the jar is filled with water and the required amount of alcohol added. The solution is then passed into another jar through cloth or filtering paper, then poured on the fruit and covered immediately."

Cold Storage for Fruit. Shipping. — One of the many lessons taught by the pomological displays was the fact that apples and grapes from cold storage, contrary to the accepted opinion, keep as well, when exposed to ordinary conditions, as similar fruits kept in house cellars. The New York fruit from cold storage kept for many weeks when exposed upon the shelves, enabling the State to display many varieties of apples throughout the summer, and some varieties of grapes in July. It was not designed that the fruit should be kept upon the tables for a great length of time, but in consequence of the burning of the cold storage builing on July 10th, in which New York lost all its stored fruit, it was impossible to replenish the shelves. It was found also that apples and other fruits kept best in cold storage when each fruit was separately wrapped in paper.

It appeared to be the general experience that perishable fruits, as strawberries, carry best in shipment if packed in very tight cases, with no provision whatever for ventilation. This is coming to be the opinion of growers and merchants, also, and it is sustained by chemical considerations. It is essential to the best results from close packing, however, that the fruit be dry and cool when placed in the cases.

Strawberries and other soft fruits were found to ship best in crates with a compartment for each fruit, after the pattern of egg crates. A square of cotton wadding should be placed below and above each fruit. Cotton batting is objectionable because it adheres to the fruit and is removed with great difficulty. The most perfect collection of strawberries at the Fair was packed in the manner described, and the fruit traveled from Oswego County, N. Y., at the eastern extremity of Lake Ontario.

Requirements for Exhibits of Vegetables.—"Culinary vegetables [Group 23] competing for awards must include at least the following numbers and quantities: Artichokes, green beans in pod, Brussels sprouts, mushrooms, pickling onions and onions for sets, peas, green, shelled, or in pod, preserving tomatoes, chufas and peanuts, one quart of each variety; asparagus, beets, tied with tops on, celery, leeks, parsley, and rhubarb, three bunches each; beets, mangels, tops trimmed off, kale, broccoli, cabbage, cauliflowers, carrots, egg plant, horseradish, kohl rabi, lettuce, muskmelons, watermelons, martynia, okra, onions, large varieties, parsnips, peppers, large varieties, salsify, turnips, and sweet potatoes, six each; green corn, one dozen ears; cucumbers, six specimens each; endive, three specimens; onions, smaller varieties, potatoes and tomatoes, one-half peck each."

Floricultural Displays.—It was expected that cut flower exhibits would be made on each Tuesday throughout the Exposition, but the plan could not be consummated. The first important display was a show of gladiolus made in August by C. H. Allen, of Floral Park, N. Y. On September 4, F. R. Pierson & Co., Tarrytown, N. Y., made a display of Meteor roses. Ernst Asmus also made a show of lily of the valley about this time. These were the chief displays of cut flowers, and although they were excellent in quality, they were less extensive than the occasion demanded. The following is an unofficial list of awards in floriculture, Group 22.

New York.—New York City—Peter Henderson & Co., primroses rubra, Kermesina splendens; cyclamen, mixed; pansy, yellow edge, black and red, Gloriosa perfecta, quadricolor; canna, Mme. Crozy. Abendroth Bros., plant receptacles, vases. J. H. Small & Sons art floral designs. New York Florists' Club, literature; E. Asmus, lilies of the valley. Edward Jansen, vases. Reed & Keller, florists' supplies. Mrs. H. Walter Webb, mounted fern colletcion. Fred W. Kelsey, rhododendrons. J. M. Thorburn & Co., Cyclamen atropurpureum.

New York State Commission—Tuberous begonias, palms, hollyhocks, iris, roses, crotons.

Buffalo—Daniel B. Long, floral photos.

New Rochelle—Siebrecht & Wadley, Ouvirandra fenestralis.

Dongan Hills—William Tricker, Nymphæa Laydekeri rosea, No. 1 new seedling (Smithii), No. 2 new seedling (Deanii), No. 3 new seedling (delicatissima); Eichornia crassipes major; collection of nymphæas.

Albany—New York State museum, collection of fungi.

Rochester—Ellwanger & Barry, collection of hollyhocks, peonies, rhododendrons.

Tarrytown—F. R. Pierson Co., cannas: J. D. Cabos, Count Horace de Choiseul, Alphonse Bouvier, Paul Marquant, Capt. P. de Suzzoni, Francois Crozy, Mme. Crozy.

Woodlawn Park—William Nilsson, bedding plants and ornamental design.

Brooklyn—Eileen Donlan, bedding plants in ancient harp design.

Flushing—G. Marc & Co., roses. Parsons & Sons, rhododendrons.

Pennsylvania.—Philadelphia—Henry A. Dreer, cineraria, double mixed; primrose punctata; Gloxinia grandiflora; caladiums; ferns; cannas: Mme. Crozy, Paul Marquant, Alphonse Bouvier, Capt. P. de

Suzzoni, Paul Bruant, J. D. Cabos. George Craig, collection of roses. G. W. Childs, caladiums. A Blanc & Co., cacti. H. Stebe & Sons, plant receptacles and cork decoration. E. Kauffman & Co., art floral designs.

Pittsburg—B. A. Elliott & Co., herbaceous plants.

West Grove—Dingee & Conard Co., roses.

Pennsylvania State Board—Ornamental foliage plants, cannas: Paul Bruant, Capt. de Suzzoni, Alphonse Bouvier, Paul Marquant, Egandale, Mme. Crozy, J. D. Cabos, Florence Vaughan.

Allegheny Park—William Hamilton, specimen cycad, Zamia latifrons.

Shiremanstown—H. S. Rupp & Sons, double white primrose.

MASSACHUSETTS.—Boston—R. & J. Farquhar, primrose, double crimson; cyclamen Mont Blanc; cineraria nana.

Norwood—Rea Bros., herbaceous plants.

ILLINOIS.—Chicago—J. C. Vaughan, cyclamen, deep crimson; collection of roses, rose Senator McNaughton; cannas: J. C. Vaughan, Florence Vaughan, J. D. Cabos, Alphonse Bouvier, Count H. de Choiseul, Egandale, Francois Crozy, Paul Bruant, Capt. P. de Suzzoni, Mme. Crozy. Mrs. C. A. Sheldon, herbarium of Mexican winter flora, and algæ.

Edison Park—Miss Nettie Palmer, herbarium.

Staunton—E. A. Bechtel, double flowering crab apple.

NEW JERSEY.—Short Hills—Pitcher & Manda, orchids, palms, tree ferns, araucarias, rhododendrons, ornamental foliage plants, ferns, floral photos, lilies, pyrethrums, iris, herbaceous plants, roses.

Bordentown—Edmund D. Sturtevant, Nymphæa Zanzibarensis superba, N. Brakelyi rosea; aristolochia.

CALIFORNIA.—San Francisco—Sherwood Hall Nursery Company, sweet peas.

Niles—California Nursery Association, roses.

OTHER STATES.—Indiana—Richmond—E. G. Hill & Co., Begonia Rex.

Texas—Laredo—Anna B. Nickels, cacti.

Kentucky—State of Kentucky, herbarium. Louisville—Nanz & Neuner, roses. Bowling Green—Miss Sadie Price, herbarium sketchwork.

Colorado—Denver—Woman's Board of Colorado, herbarium. Castle Rock—Mrs. S. B. Walker, herbarium.

Missouri—St. Louis—Missouri State Commission, herbarium.

Montana—State exhibit, Montana herbarium. Mrs. Laura E. Howey, herbarium.

Iowa—Cedar Rapids—I. N. Kramer, canna Columbia.

Ohio—Dayton Star Nursery Company, roses.

GERMANY.—Henry Mette, Ernst Benary, Haage & Schmidt, Otto Olberg, T. J. Seidel, Kohlhass & Hohnsanger, Otto Schlee, C. Beuttenmüller & Co., H. Wrede, Frederick Maecker, Carl Gorms, Dresden florists, Oskar Tiefenthal, Lambert & Reiter, Pape & Bergmann, V. Doppleb, C. Platz & Son, C. Schwanecke, Martin Grashoff, Wilhelm Pfitzer, E. Neubert, E. Vandersnussen, Gust. Schulz, Julius Hansen, Frederick Roemer, Joseph Mock.

ENGLAND.—John Laing & Sons, James Carter & Co., Kelway and Son, H. Cannell & Sons, Anthony Waterer & Sons.

FRANCE.—Vilmorin, Andrieux & Co., Croux & Sons, V. Lemoine & Sons, M. Moser.

JAPAN.—College of Science, Shibota Tomiyama, Yokohama Gardeners' Association, Sen Tsuda & Co.

CANADA—Ontario Government Commission, Mrs. A. M. Croly.

OTHER COUNTRIES.—Holland—Boskoop-Nursery Association, Jac. Jurissen; Austria—E. Seyderheim; Ireland—Alexander Dickson & Sons; New South Wales—Commission of New South Wales; Cape Colony—Cape Government, Mrs. Ogilvie; Guatemala—Government of Guatemala; Brazil—Ouro-Preto Pharmacy School; Mexico—Goverment Commission; Italy—Hillebrand and Bredemeier.

3. THE EXHIBITS.

The exhibitions in the Department of Horticulture began as early as January, 1893, when various florist's flowers were shown in the annex greenhouses in the rear of the main building. These shows were chiefly primulas, cyclamens and cinerarias, which were displayed in great variety and excellence, representing the best strains known to seedsmen on both sides of the Atlantic.* When the Exposition formally opened on the 1st of May, some of the exhibits in the annex were still in condition, but the chief interest centered in the horticultural building proper, where the great dome was staged with palms, and the two front wings or curtains were rapidly filling with various collections of plants. The rear wings or curtains were partially filled with winter apples and various fruits in liquids, and exhibits of citrous fruits from Florida and California. The wooded island was not yet in foliage, and the borders and exhibitor's beds were either unplanted or the exhibits had scarcely begun to show their earliest growth. Along the front esplanade of the Horticultural Building, enormous beds of pansies were in bloom, and a little later Dutch tulips appeared in the borders along the rear of the building. The nursery plots in the Midway Plaisance were unplanted, and both here and on the island the planting of exhibits continued until June.

The interior of the building was interesting from the first, however, and except in the wines, implements and seeds exhibits, the early or permanent displays were largely installed at the time of opening. The fruit rooms progressed rapidly in interest after the first of June, and the constant changing and shifting of the perishable exhibits added much to the charm of the general display. The floral rooms did not change perceptibly in general effects throughout the Exposition, but various minor elements were variable, particularly the introduction, as the season advanced, of fakir's outfits. These vender's stands came to be an almost intolerable nuisance, and they were often allowed to plant themselves in front of interesting exhibits, to the great detriment of the legitimate purposes of the Fair. At one time, twenty-one of these stands were counted under the dome alone, selling articles ranging from canes and candies to jewelry, flowers made of turnips, and the wonderful Columbian cactus, for which a glowing picture of an amorphophallus served as a bait to the unwary.

3a. The Plant-effects in the Horticultural Building.—There were sixteen distinct plant exhibits by

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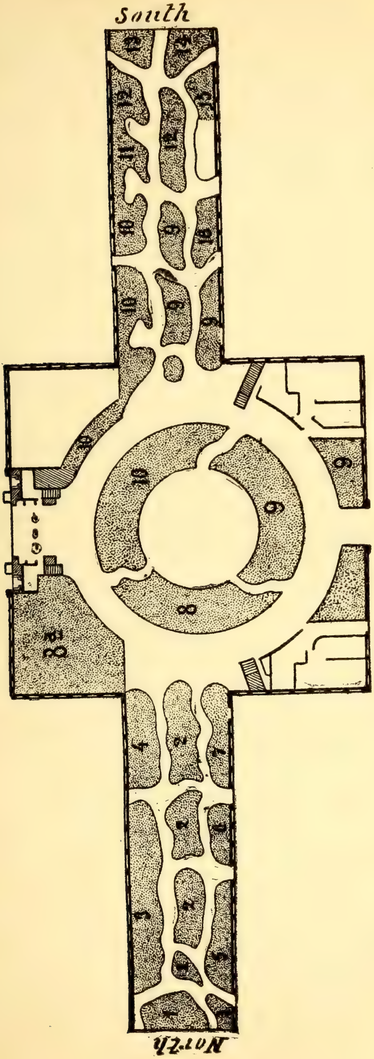
*See *Garden and Forest*, vi. 94, 157, 178; *American Florist*, viii. 535, 954.


South
North

GROUND PLAN OF THE FLORICULTURAL PORTION OF THE HORTICULTURAL BUILDING.

different firms, commissions and individuals, many of them collective. The accompanying diagram shows the floor-plan of the dome and floricultural curtains, the shaded portions representing the beds of plants. The circular space in the center was occupied by an artificial mound under the dome; and the beds about it numbered 8, 9 and 10 in the floor-plan on page 71, were level floor-groups of palms and other bold plants. The most conspicuous feature of the interior of the building was this mound, and the effect of the plants massed upon its flanks and summit at once arrested attention. The framework of the elevation, which was designed to represent a mountain, was a rough board scaffolding, beneath which was a crystal cave belonging to a private person, or concessionaire. The cave itself was sufficiently out of place in a horticultural building, and the exterior of it, painted red, was but scantily covered by the unhappy plants which were perched upon it. The elevation in no way suggested a mountain and did not fail to leave an unpleasant impression upon the mind of the critical visitor. There had been some attempt to construct rocks at intervals on this structure, of painted canvas and other material, but the observer was never deceived as to their character. This pile rose to the height of seventy feet, and the different steps and platforms were occupied by a heterogeneous mixture of plants, among which were boxes of cannas, a good variety of palms, and a crown of ficuses. In order to cover the bare walls, evergreens were cut and adjusted to the vacant spaces, and some of these, dead and brown, were still in place at midsummer. The structure remained full of ugly gaps until near the close of the Fair, and the whole object was a most unhappy and crest-fallen spectacle. But, wholly aside from the poor condition of the decoration, its design was without purpose and was bad; it accomplished nothing more than a rude filling of the space; it represented no mountain vegetation, nor the flora of any land, nor had it any artistic value. The base of this structure was greatly relieved by excellent collections of palms, but these became yellow and sickly in summer, probably from the too intense light of the unscreened glass and the great height of the roof.

The group on the north of the dome, marked 8 in the plan, was contributed by the State of New York, in which important exhibitors were the Jay Gould estate, Julius Roehrs and Prospect Park. The collection was under the charge of James Dean, of Bay Ridge. Perhaps the most conspicuous plants in the group, which contained many fine specimens, were *Ravenala Madagascariensis* or Traveler's Tree, *Seaforthia elegans*, *Pandanus utilis*, *Areca lutescens*, and *Arenga Bonnettii*, from the estate of Jay Gould; *Dracæna Knerkiana*, from Mrs. E. Beck, and good specimens of *Thrinax elegans*, *Corypha australis*, *Pritchardia macrocarpa*, *Phœnix Canariensis*, and *P. spinosa;* also an abundance of sweet bay (8 a). As these plants occupied the north side of the dome, they were spared the ill effects of the unscreened glass, and mostly remained in good condition. Pitcher & Manda's collection of palms on the west side (9) was excellent in itself, and comprised some rare and costly species, but it suffered considerably. Palms in this group worthy of special mention were a *Kentia Forsteriana* 25 feet high, and carrying 16 good leaves; *Pritchardia Pacifica*, and a variegated *Latania Borbonica*. About 150 varieties of palms were originally placed in this collection. The remaining portion of the dome circle was occupied by Pennsylvania with various palms of merit.

The south wing had many plants and groups of great merit, and most of the arrangement was good. Pennsylvania showed a long border (10, 10, 10), which began with an admirable collection of variegated caladiums opposite the dome, from George W. Childs, continued through a variety of plants contributed by Robert Craig, Henry A. Dreer and others, and ended on the south with a large collection of ferns from Mr. Dreer. The Pennsylvania displays were in charge of Robert Craig, and they remained in good condition throughout. The most decorative or pictorial group in the building was a collection of stove-plants in the center of the curtain (9), from Pitcher & Manda.* This group, containing 260 specimens, included dieffenbachias, alocasias, marantas and begonias, and it had a good setting against a striking planting of tree-ferns and other large ferns. A short colonnade of tree-ferns, the tallest 27 feet in height, comprised the center of the group, with something over one hundred varieties making up the details. Opposite the low group of stove-plants was a general collection of orchids, anthuriums, nepenthes and other plants of this class (9), from Pitcher & Manda. The orchid display of this firm was the only one of importance in the building, and included 47 kinds of cypripediums, 403 plants of *Cattleya Mossiæ*, 390 of *Cattleya citrina*, and 34 of the new *Cuttleya Gravesiana.* Something over a thousand plants of orchids were shown in this collection.

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*The statistics of Pitcher & Manda's exhibits, which were the largest in the building, are as follows: 29 varieties and species of araucaria; 32 varieties cycads; 150 varieties palms; 260 kinds of specimen stove plants; 111 ferns and selaginellas; 35 varieties anthuriums; 47 cypripediums; 1189 plants of other orchids; 11 varieties nepenthes; 84 varieties bromeliads.

Following Pitcher & Manda on the south was the most extensive and best collection of begonias with decorative foliage at the Exposition (16), shown by E. G. Hill & Co. This exhibit comprised nearly one hundred varieties, representing the best of those now in cultivation. Among the meritorious kinds were Count Louis Erdody, Inimitable, Anna Dorner, Minnie Palmer, Madame Leboucq, Bertha McGregor, and a number of distinct seedlings. The plants were large and well arranged, making, altogether, one of the best displays in the Horticultural Building. A large collection of cacti was shown beyond this by Mrs. Anna B. Nickels, of Laredo, Texas. The extremity of the curtain was occupied by a general collection of palms, stove-plants, gardenias and others, shown by Massachusetts (11), Missouri (12, 12), J. C. Vaughan (13), Albert Fuchs, Chicago (14), and Texas or Galveston (15). Opposite the dome, on the west (9), stood a large collection of cycads from Pitcher & Manda, including about thirty varieties. The south curtain presented, on the whole, a certain continuity and progression of effect which was pleasing, especially when seen from the gallery of the dome. It rose gradually from the low group of stove-plants in the foreground to the taller ferns and palms in the rear, and the bright colored foliage and flowers gave it a finish which was lacking in other parts of the building.

The north curtain was much more heterogeneous in its effects. It contained, however, a wonderful collection of plants, especially in the great tree-ferns and massive stag-horn ferns from New South Wales (2, 2, 2, 2), which extended, like a tropical forest, down the center of the great hall. The curious dwarf trees of the Japanese garden (3) excited no end of comment, and properly so, for the Japanese display in this building was excellent. This is discussed in the following pages. Upon the right entrance (4) from the dome to this curtain, Ontario showed one of the best masses of palms and other tropical plants in the entire Exposition. Across the extreme end of the room (1, 1), Trinidad interposed a bold group of palms and bamboos. There were two large competitive exhibits of Indian azaleas in the north wing of the Horticultural Building. These were from Otto Olberg, Dresden (5), and Ch. Vuylsteke, Loochristi, near Ghent (6). The plants were massed in a small space, so that they presented an almost continuous surface of mixed and dazzling color. The one distinguishing feature of the collections was the great variety in color, markings, size and texture of the flowers. The plants were uniformly well grown, although they were not superior in this respect to specimens which may be seen in any good American collection. An idea of the great variety of the display can be had from the fact that Mr. Olberg showed 178, and Mr. Vuylsteke 78 named kinds.

Opposite the Ontario exhibit, Mexico (7) had an excellent collection of cacti which was particularly rich in giant echinocacti.

Altogether, aside from the center piece of the dome, the plant effects were good; and even under the dome the flanking groups upon the floor were for the most part excellent. *Cobœa scandens* was used to cover the trusses and balconies with verdurous festoons,—a vine which was also used to good effect upon the walls of the curtains. The display, as a whole, can not be said to have been representative of American floriculture, inasmuch as so few firms and individuals participated in it; and the foreign representation was sporadic. One of the most pleasing features of the exhibition was the perspective in the curtains, in consequence of the length being four times the breadth. This proportion greatly increased the apparent extent of the display, and gave it a spirited interest which could not have been obtained by square rooms of even greater areas.

3b. The Fruit Curtains.—Lying in the rear of the plant curtains, just described, were the two wings devoted to the pomological displays. These were much like the plant wings in style, except that less glass was used in the sides and roofs, and the floors were laid with boards. Each of them was 46 feet wide by 346 feet long. Entering the short passage leading west from the great dome, one found the fruit displays extending away upon either hand. The early displays in these wings were composed largely of apples from cold storage, citrous fruits from California and Florida, and miscellaneous collections of fruits in preservative liquids. During June and July the berries became attractive features of the displays of a few States, especially of Illinois, New York, Wisconsin, and New Jersey. By the middle of August, the new tree fruits of the season introduced fresh interest, and thenceforth all the wealth of an American autumn was bestowed upon the show. The season was generally unfavorable for tree fruits of first quality, yet the country has never known such a bountiful and varied display as loaded the tables to their greatest capacity in the closing days of September and the entire month of October. If North America has not yet attained the development in matters of floriculture and scientific and experimental gardening which the European countries enjoy, it stands preëminently above all other lands in the abundance, variety and excellence of its fruits. This is America's great contribution to the progress of the World's horticulture, and the later days of the Exposition must have convinced all experienced persons of this fact.

In this great display, many States and several Provinces were concerned, and each one had its distinctive merits. But it is conceded that New York was among the first in the uniform excellence and variety of its display, and in the correctness of nomenclature and abundance of educational features. California, both in the Horticultural Building and its own State Building, was the most lavish in its displays, and it attracted most attention. Illinois was one of the largest and very best exhibitors. Ontario, like New York, displayed a great variety of fruits of high character. Oregon, Washington and Idaho astonished the Eastern visitors with the glowing colors and enormous sizes of the tree fruits. Other leading exhibitors were Missouri, Minnesota, Wisconsin, Iowa, Arkansas, Nebraska, New Jersey and Michigan. Over half the States made no definite attempt at display, although, first and last, something in the line of fruit was received from residents of nearly all of them.

*The Opening Exhibit of Apples.** — Apples of the crop of 1892, taken from cold storage and exhibited in the Horticultural Building, at the opening of the Exposition, were displayed by States and Provinces, as follows: Maine, New York, New Jersey, Michigan, Wisconsin, Minnesota, Illinois, Missouri, Iowa, Colorado, Idaho, Washington, Oregon, California, Ontario, Quebec, Nova Scotia, Prince Edward Island; and New South Wales sent 10 varieties of the current year's crop. The displays of apples from the Northwestern States—Idaho, Oregon, Washington—were characterized by fruits of enormous size, high color and remarkable freedom from scab. To an Eastern man, the most interesting variety from these States was the Yellow Newton Pippin, which is the leading apple over a great territory there, and which is twice as large as the same apple grown in the Hudson River valley. Blue Pearmain, which is little known in the Eastern States, ranks second in general importance in the Northwest, and specimens on exhibition measured 14 inches in circumference. The Idaho commissioner considered Yellow Newton Pippin, Blue Pearmain, White Winter Pearmain, Winesap, Janet, Ben Davis, Wolf River and Esopus Spitzenburgh the leading winter apples for that State. He had an exhibition of 23 varieties in the fresh state, and an additional number in liquids. There is a conspicuous difference in specimens of the same variety when grown with and without irrigation. The irrigated apples are said to be larger than the others, higher colored, better keepers, and to have superior flavor. The Oregon exhibit of apples was remarkable for its effective arrangement, the different colors and sizes being alternated and composed for the purpose of giving a general effect. There were 26 varieties in the exhibit, although the number of plates was much greater. Washington showed 18 varieties which were much like those from Oregon. The Washington commissioner would select the best winter apples for Washington, as follows: Yellow Newton Pippin, Blue Pearmain, Winesap, Red Cheek Pippin, Janet, Rome Beauty, White Winter Pearmain, Ben Davis, Swaar, Rhode Island Greening and Vandevere, the latter being recommended for very late fall. From California, plates of Ben Davis, Yellow Newton Pippin and White Winter Pearmain were shown. Colorado showed handsome Ben Davis, and an apple known in that State as Limber Twig, although it is, perhaps, not the Limber Twig of the East.

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*For an account of the geographical differences in the apple exhibits and for lists of the varieties shown by New York, Illinois, Wisconsin, Washington and New South Wales, see Rep. Am. Assoc. Nurserymen, 1893, 1-5.

Missouri had one of the most attractive exhibits in the hall. The Ben Davis was the leading variety in the display. In all States east of the Mississippi, the apple-scab injury was apparent, and the apples were smaller and firmer than those from the West. Illinois had over 20 sorts, among which the Ben Davis, Winesap, Jonathan and Janet were conspicuous. The Iowa and Michigan exhibits were small, owing mostly to the short crops in those States in 1892. Minnesota showed 25 varieties, many of which are scarcely known outside that State. Its leading winter apple on exhibition was the Wealthy. Wisconsin had 30 varieties on the tables. Here, as in Minnesota, Wealthy led. The Duchess seedlings were conspicuous. In Waupaca County alone, 13 Duchess seedlings are known, all but one of which are said to be later and better than the parent.

Passing to the eastward of Lake Michigan, one comes into the region where Baldwin is the leading apple. New York showed the greatest number of varieties of any State or Province. Upon the opening, May 1, 110 varieties were upon the tables, and, when the judges passed upon the exhibit ten days later, 101 varieties were still shown. Canada was strongly represented. Ontario showed 555 plates when the judges passed, and 38 varieties, nearly all standard kinds. Quebec showed 80 varieties, Nova Scotia 89 varieties and 222 plates, and Prince Edward Island 20. The leading Ontario apples on exhibition were Baldwin, Hubbardston, Mann, Roxbury Russet, Canada Red, Ben Davis, Cranberry Pippin, Pewaukee, Ribston Pippin, American Pippin, King, Rhode Island Greening and Northern Spy. The leading Quebec sorts were McIntosh Red, Scott's Winter, Borsdorf, Wolf River, Canada Red, Flushing Spitzen.

burgh, Canada Baldwin, Pewaukee, Winter St. Lawrence, Pomme de Fer, Blue Pearmain, Haas, Bethel and Alexander. Switzer is one of the promising new kinds. Fameuse is disappearing, because of scab. From Prince Edward Island, Canada Baldwin, Blenheim, Gravenstein, Ribston Pippin and Alexander, were the chief varieties shown.

Maine had a very handsome collection of 35 varieties, in which Baldwin, Northern Spy, Fameuse, American Golden Russet and Hubbardston were most conspicuous. New Jersey displayed a small unnamed collection in a refrigerator case.

The New South Wales collection was from the current year's crop. Duplicate shipments were sent in opposite directions around the world. The first to reach Chicago came by way of San Francisco and was 52 days in transit; but the other consignment reached its destination in better condition, probably because of less rail transportation. The collection comprised the following varieties: Winter Pearmain, Claygate, Golden Russet, Kentucky Red Streak, Northern Spy, Pomme de Neige (or Fameuse), Five-Crowned Pippin, Triomphe de Luxembourg, New Hawthornden and Brown's Perfection. These apples averaged about the size of large New York specimens.

Taken as a whole, the apple exhibits were good, especially when one considers that none of the States were able to fully prepare for collecting them the previous season. They did not represent the entire country, to be sure, but they comprised excellent specimens of all the leading types of American winter apples.

Citrous Fruits were the most prominent displays at the opening of the Fair, and for four months they continued to be the greatest attraction, among the fruit exhibits, to the general visiting public. This was because the fruits were displayed in almost reckless profusion and in many bold designs. The largest single exhibit was made by Los Angeles county, California, in the south-west curtain of the Horticultural Building. A monument 35 feet high, covered with 13,873 oranges and some lemons, stood near the north end of the curtain, the eagle which surmounted it standing in the very peak of the roof. The base of this monument was at first covered with the Washington Navel orange, which is the one distinguishing orange of California; but as these passed out of season, Mediterranean Sweets and others were substituted. At the southern end of the same room, a large central table or platform, 24 by 52 feet square, contained a Los Angeles exhibit in the central portion, San Bernardino on the north, and San Diego on the south. The boldest figure upon this table, which was overlaid with dark green felt, was the Liberty Bell, full size, comprising the central figure of the Los Angeles display. The entire table was decorated with lines, mounds and pyramids of fruits in the most profuse and attractive manner. Orange county, California, occupied a narrow table upon the east of this central platform, and the recently organized Riverside county had one upon the west. In the California State Building the display of citrous fruits was duplicated. Here, however, the seven southern counties made a collective exhibit of various products under the name of the Southern California Association. This organization comprised the counties of Los Angeles, San Diego, San Bernardino, Santa Barbara, Ventura, Orange and Riverside. The boldest design in this building was a huge ball of fruit about eight feet in diameter, upon a base 12 feet square. It was contributed by the Los Angeles county people. All these designs were kept sweet and fresh for months by new consignments from the storage houses.

The central and northern citrous counties of California were also represented in the State Building, although none of them, save Fresno, attempted to show fresh or plate fruits, principally because the oranges ripen some three weeks earlier in the northern counties than in the south, and no attempt was made to keep them.

Early in July, many of the varieties of oranges which were prominent in the California displays earlier in the season had disappeared. In the State Building only Hart's Tardive (or Hart's Late), Valencia Late and various seedlings were left. In the Horticultural Building, however, Washington Navel was still shown in considerable quantity. The Improved Navel, from A. C. Thompson, the originator, Duarte, Los Angeles county, made an attractive show. This orange is remarkable for its enormous size and weight, and its quality is good. Next to the Washington Navel, the St. Michael and Mediterranean Sweet contend for supremacy, but the St. Michael appeared to be in greater favor. Other prominent varieties were Malta Blood, Australian Navel and Ruby Blood. Various Tangerines and Mandarins were on exhibition, of which the King was the most prominent of little known kinds.

Lemons were shown in profusion by the Californians, especially by Riverside county, under the charge of G. W. Garcelon, one of the most successful of the lemon growers of the Pacific Slope. Lemon growing is a very recent industry in America, but the Californians are now confident that it will meet with commercial success. The lemons on exhibition were well cured and appeared to possess all the merits of an ideal fruit. The leading variety was Eureka, which is an ever-bearing sort. A tree of this variety, in flower and fruit, stood upon the lawn in front of the California State Building. Lisbon occupied second place, and Villa Franca was prominent. Apparently the most remarkable, as well as the handsomest, lemon on exhibition was the Bonnie Brae, shown in the San Diego displays. It is very long and smooth, with a short tip, thin skin, and is seedless.

California also showed limes, citrons, pomelos and grape-fruits. Some idea of the extent of these exhibits can be learned from the fact that 75 carloads of citrous fruits had been shipped from the seven southern counties for displays in the Horticultural and California Buildings previous to the first week in July. Aside from the fruits, there was a California orange orchard in the north court of the Horticultural Building, and another in the nursery section of the Midway Plaisance, both of which are further described in the account of the nursery exhibits, in later pages.

Florida was the only other American State which made a citrous exhibit. The State made no appropriation for World's Fair purposes, and the display was collected entirely by private enterprise. This fact accounted for the small and comparatively poor show, which, under liberal support, might have been very large. It must also be said that the Florida fruit is earlier than that from the Pacific, and was nearly out of season when the Fair opened. The Florida section was at the north end of the north curtain. The varieties of oranges were Hart's Tardive and Seedlings, all more or less russetted. An arch of russets spanned the central passage-way, flanked by a cocoanut tree, and it was one of the striking effects of the early days of the Fair. The Florida oranges kept better than the California ones, notwithstanding their earlier season, and their quality was unsurpassed. Grape-fruits were also shown from Florida. In July the Florida display perished, and the space was taken by Nebraska and Kansas, and was later filled with bountiful exhibits of handsome apples.

Italy showed lemons and oranges, but the display was not extensive and the fruits were nearly all wrapped in colored tissue papers and covered with tinsel and gaudy pictures and ornaments. In most cases, the covers of the boxes only were removed, and the fruits were not exposed to view, or they were covered with glass. The labels were very few, and the visitor was unable to form any intelligent conception of the variety or merit of the exhibit. The oranges represented the familiar Italian types seen in the markets, being smaller and thinner skinned than the California varieties. The lemons, to all appearances, possessed no superiority over the American product.

The exhibit, because of its obscured condition, attracted little attention. Its method of displaying fruits was wholly unlike that of any other exhibit in the entire Department of Horticulture, and for this reason it was interesting as representing a distinct theory of fruit exhibition.

New South Wales showed a quantity of lemons and oranges on tables adjoining the Italian exhibit in the south curtain. The lemons were Eureka and Lisbon mostly, and they compared tolerably well with the average run of California specimens, although they were less attractive than the better samples of the domestic product. The oranges were all one variety, the Parramatta, a small flat, very sour fruit. New South Wales made the most commendable efforts, in every department of the Exposition, and its shows of pomaceous and citrous fruits excited much admiration from the first.

There seems to be an unwritten law that citrous fruits must be shown in profusion and in bold designs in order to express exhibitive merit, while apples and all other fruits should be arranged on plates in definite numbers. In many respects this method of displaying citrous fruits is unfortunate. It results in a mere display, which is largely devoid of educational interest. One could scarcely learn from the profuse exhibitions of California oranges and lemons what are the best varieties, or what their peculiarities or adaptabilities. The importance of varieties and methods of treatment is obscured by the merely decorative features of the display. New South Wales, alone, showed all its citrous fruits on plates, although California had plate fruit in small amount on some of the tables. It is true that decorative displays add greatly to the attractions of exposition, but it is doubtful if they are in all ways the best; although every visitor must have felt grateful to the enterprise of California, whose almost reckless profusion of fruits and designs rescued the early pomological displays from monotony, and included an horticultural show in one of the seven wonders of the Fair.

The June Exhibits of Fresh Fruits.—The first American fresh fruits to arrive at the Fair were Peen-to peaches from Florida, received early in May. But there was no subsequent attempt to show Florida peaches. In fact, no new Florida fruits were shown, save a small collection of pineapples from the Indian River region, owing to the lack of any appropriation by the Legislature to defray the expenses of an exhibit. The oranges and cocoanuts placed on exhibition at the opening of the Fair still attracted much attention, however. The second lot of peaches arrived on June 12th from Kentucky. These were a new variety, the Sneed, sent by W. J. McPheters, of Clinton. This peach originated in Tennessee, and is said to be a seedling of Family Favorite, which is a seedling of Chinese Cling. The Sneed is thought to mark the introduction of a new type of very early peaches, although it has much the appearance of varieties of the Alexander class. The habit of the tree is said to be much like that of the Chinese peaches. The third lot of peaches arrived June 13th from Central Arkansas. These were Alexander. Two days later samples of Governor Garland were received from the same State. This peach differs from Alexander only in minor characters, and, like all very early peaches, is white fleshed and half-clingstone. On June 18th, Missouri sent Governor Garland peaches, and on the 20th, unnamed peaches were received from Villa Ridge, Southern Illinois. From this time on, peaches from various sources were constantly on exhibition. The first new American apples appeared June 15th from Central Arkansas. These were the Yellow May, a small light yellow apple with a streaked blush in the sun, valuable only for culinary purposes.

California had cherries on exhibition from Sacramento county, May 17th. Royal apricots from Yolo county began to arrive the middle of June. Loquats, or the so-called Japan plum, were on exhibition early in May. California made no attempt to show the early peaches because of the great distance they would be obliged to travel. A few figs were received June 13th from D. Bonelli, Ryonville, Nevada. These were shipped from Nevada May 28th, and were in poor condition upon arrival, but they came from an unexpected source, and attracted attention.

As early as June 7th cherries and gooseberries were shown from Marion county, Southern Illinois. The cherries were Dyehouse and Early Richmond. At the time the first cherries were received from Southern Illinois some varieties were still in bloom about Chicago, at the northern end of the same State. The gooseberries which were shown early in June were Houghton, Mountain Seedling, Downing, Champion and Industry. Ripe currants were received June 13th from Southern Illinois. Red raspberries, Turner and Brandywine, came from Centralia, Illinois, June 20th. Black raspberries first appeared June 14th. Souhegan, Winona and Kansas were the first varieties shown. Early Harvest blackberries were received June 20th from C. H. Webster, Centralia.

The first new grapes on exhibition were a lot received the middle of May from Bruni & Brother, Laredo, Texas. This lot, with subsequent additions, included some eighty plates of Zinfandel, Sweet Water, Muscat of Alexandria, and Tokay, all of the European type. There was a new white grape in the lot which the exhibitors named Samuels, in honor of the Chief of the Horticultural Department. It is said to be a hybrid between a Vinifera variety procured in California and some native Texan species. The bunch is large and much compounded or branched, the grapes of medium size and very thickly set upon the cluster, with a skin adherent, as in the true Viniferas.

In strawberries, Sacramento county, California, made the first attempt. Berries which were picked May 11th were on exhibition in both the California and Horticultural buildings May 17th, and a second consignment was received May 23d. These were all Triomphe de Gand. There were no subsequent displays from California. Illinois was early in the field with strawberries. The first consignments (Gandy and Riehl's No. 6) were received from the southern part of the State May 15th. New Jersey first had strawberries on exhibition June 7th, from William H. Elvins, Hammonton, comprising Belmont, Sharpless and Bubach. The display was continued and augmented, the berries being shipped in refrigerator cases and kept under refrigeration at the Fair. The New Jersey show was very excellent. New York began receiving strawberries from the lower Hudson River valley June 13th. The first variety shown was Bubach. On June 21st, the sixth consignment of the season was unpacked. Several installments were received from the State Experiment Station at Geneva, comprising several comparatively new sorts. The long shipment from New York tested the carrying qualities of strawberries. Among the best shippers were Sharpless, Middlefield, Gandy, Chair's Favorite and Beverly. These New York berries were shipped in egg-cases, each berry occupying a compartment with cotton wadding. In these cases, even Cumberland and other soft berries arrived in good condition. When the berries are packed in ordinary cotton batting, however, the fiber adheres to the fruit and makes it look moldy. The New York exhibit also showed fifty-one varieties of strawberries growing and bearing in eight-inch pots. The last important collection of strawberries to reach the Fair, was also the best. This was a display of 61 varieties from L. J. Farmer, Oswego Co., New York, which was placed upon the tables June 28th. The berries were picked upon the 26th, and were shipped in compartment cases with cotton wadding, as already described. The condition was so good upon arrival that not one berry was damaged, and the fruit remained upon the plates for a week. A peculiarity of these fruits was their truthfulness to the average type of the variety, rather than mere size or uniformity.

A single unnamed variety of strawberries from Idaho was placed on exhibition June 16th. On June 17th, a lot of Clark's

Early, a new variety, was received by the Oregon people in good condition, after having traveled 2,500 miles without refrigeration. Six days after its arrival this berry was still firm. It is medium in size, exceedingly solid and tough, reminding one somewhat of the Glendale. The color of both exterior and flesh is very dark dull red. The berry is not high in quality, but it certainly gives every promise of being a good shipper. On June 21st the first strawberries arrived from Michigan, Minnesota and Ontario. Michigan had Jessie and Warfield from Benton Harbor, Minnesota had Cresent, and Ontario showed nineteen varieties, mostly in poor condition, although Jessie, Beder Wood, Daisy and Farnsworth stood the journey well.

In June, a small exhibit of apples of the crop of 1892 was received from Russia. These had been delayed in the Baltic, along with other Russian exhibits, and were without cold storage until they arrived in Chicago. The collection attracted much attention from fruit men, partly because of the great interest which now attaches to all Russian fruits, and partly from the peculiarities of the apples themselves. Some of the varieties were peculiarly ribbed and elongated. None of them equaled our best varieties in size and handsome appearance. The exhibit included, according to Professor Budd, who has given me the names, varieties which are known in America as Golden Reinette, Aport Voronesh, Arabskoe (No. 257 Iowa Agricultural College), Bogdanoff White, Sklanka Bogdanoff, the true Cross Apple (15 M, Iowa Agr. Coll.), Marmalade (88 Voronesh), Lead (3 M), Royal Table (5 M), Zuzoff Winter (No. 585), Voronesh Rosy (No. 1277), and a few others.

The Midsummer Fruit Exhibits.—From the first of July, the fruit curtains assumed a new life and interest. The tree fruits began to arrive in quantity from the Middle States, while the bush fruits of the Northern States and Canada were still shown in profusion. At the middle of August, the first thing which attracted one's attention upon entering the south curtain from the north was the interesting remnant of the New South Wales collection. This had now dwindled to a few plates of apples and a number of lemons, but these fruits had been on exhibition many weeks after having made a journey of nearly two months from Australia. At the left of this space, the collection of Italian lemons and oranges was still in good condition. A central table, facing the entrance, was devoted to fruits from Kentucky, comprising a considerable collection of autumn pears and apples, peaches, plums and grapes. California occupied a central table to the left of this and a wall table still to the west. The plates of citrous fruits had now largely disappeared from the California collections, and their places were taken by immense plums, pears, peaches, nectarines and grapes. The Susquehanna peach, which seems to meet with indifferent success in the East, was conspicuous in this collection. The great monument of California oranges was still attractive, although it had lost some of its freshness; and the same may be said of the remarkable citrous display which California made at the south end of this curtain. Against the east wall Maine still held its space, although the exhibit had now dwindled to a few preserved fruits and jellies. About half way down the hall Iowa had a long table heavily loaded with new and old apples, with a sprinkling of native plums. Illinois, appropriately, occupied the largest space of any exhibitor in the hall. It showed great quantities of apples, both old and new crops, peaches, pears and grapes. They were disposed on three long tables with mirror-backed shelves, with blackberries, crabs, plums and some other fruits in a cold-storage case.

Opposite Illinois, Minnesota had one of the best storage case displays in the building. Michigan, which was very poorly represented in earlier displays, was now beginning to fill its shelves with early peaches and apples, and there was promise of a representative display later on. New Jersey had a good collection of apples and pears, and Wisconsin a small and brilliant display of new apples, with the last of the blackberry show still on the shelves. The Lubsk Queen, an apple in this exhibit, was the most remarkable combination of brilliant pink and white and pruinose color of which the eye can conceive, and perhaps the most striking single variety of fruit shown at the Fair. New York was holding its place as one of the most varied and carefully made collections of fruits in the building, although the season's fruits had not yet appeared in great quantity. A large and interesting remnant of apples from the cold-storage fire was still on the shelves.

Entering the north curtain from the south, one came first upon the large collections of the Canadian Provinces, which were just beginning to feel the effect of the first early apples and peaches. New Mexico followed with a small lot of bottled fruits, beyond which was a wretched collection of wax fruits and vegetables from Louisiana. Montana and South Dakota showed bottled fruits. Arkansas had a long table devoted to an excellent display of apples and peaches. Idaho showed new peaches, apples and plums, but the larger part of its display, and the entire display of Washington, were yet comprised in the bottled products. In the Georgia section, Mr. A. F. Rice, of Griswoldville, showed a lot of Superb grapes, a new variety, seedling of Eumelan, resembling Concord in color, but very sweet. Missouri showed by far the finest lots of peaches in the building, the chief variety being the now famous Elberta. This State also displayed new apples and pears, native plums, and grapes in variety. Colorado, which heretofore had confined itself almost wholly to bottled and wax fruits, now had fresh peaches, wild goose plums and a long table of new apples. Oregon was receiving new grapes, pears, apples and plums. The great space at the north end of the curtain, occupied by Florida earlier in the season, was rebuilding, and Nebraska was spreading a very large and attractive display of apples, peaches, grapes and native plums; and Oregon had secured some of the space for a show of stone-fruits, including the Early Red nectarine and the Hungarian prune, the latter showing many double specimens.

Even at this date, it was too early to judge of the comparative merits of even the early displays of new fruits, but it was clear that Illinois, Oregon, New York, Missouri, Arkansas, Ontario, Iowa, New Jersey, Nebraska and Wisconsin were to make strong exhibits. California seemed inclined to rest upon its citrous exhibits, and many States, even in the East, which are capable of making important shows, had so far made no effort.

Late Stone Fruits at the Exposition.—Peaches, plums and nectarines comprised the stone fruits on exhibition at the World's Fair the middle of September. In peaches, Illinois led, both in extent and variety. The peach-growing area of the State comprises its southern half, and the peaches upon the shelves were largely those which close the peach season in Michigan and New York. Illinois and Kentucky were showing varieties of similar type and season. These Illinois peaches were chiefly Smock, with many specimens of Stevens' Rareripe, Old Mixon, Heath Free, Silver Medal, Yellow Stump, Late Crawford, Chair's Choice, Texas Ranger, Heath Cling. Some plates of Elberta still persisted. Many of these are varieties practically unknown in the northern peach areas. Among late peaches from Kentucky were Salway, Fox's Seedling, Stump, Ward's Late, and White Heath. Michigan had filled her tables with a good lot of fruit, and that from the fruit region of Oceana county was especially interesting. This northern region, on September 13, was showing Early Michigan, which comes in between Hale and Early Crawford, a white freestone, of much better quality than Hale. There is some discussion as to the difference between this and Lewis, but most growers consider the two to be distinct. From Southern Michigan the chief varieties on exhibition at this time were Kalamazoo, a magnificent yellow peach coming in just after Early Crawford, and Snow's Orange, and Barnard; and there were still a few late specimens of Mountain Rose.

New York showed, amongst others, Ackley, a white freestone coming in with Crawford; also Foster, and the Brigden or Garfield. Iowa had a few interesting plates of the Bokara peach, which is said to be hardier than the Bed Davis apple. The fruits are somewhat variable, tending to be longish, with a distinct point, and are as large as Hale. The flesh is white and sweet and the pit is free. Missouri had three late varieties from Oregon county: Picquett's Late, a peach of the Late Crawford type; Wilkins, a large white freestone; and Crimson Beauty, a large late white cling. Henrietta, the latest commercial peach of Missouri, was not yet shown. The early peach exhibits of Missouri were unusually good and they attracted much attention. The leading variety upon the Nebraska tables was Stump. Colorado had Stump, Old Mixon, Crawford, Lord Palmerston, Family Favorite, and others, all remarkable for good size and color. Kansas showed Hoppen Free, a large, new, white variety, coming in ahead of Crawford and promising well; Old Mixon, Smock, and a number of promising seedlings. South Dakota had peaches in the State building, from trees which were laid down in winter. Canada was showing a good lot of peaches from Ontario, and the Early Crawford was the leading variety.

The region of large fruits seems to begin with Idaho, and to include Oregon, Washington and California. These States made little attempt to show peaches, on account of the distance, but a few plates of enormous specimens were on exhibition. Lemon Cling was shown from Idaho. Oregon and California both showed the Orange Cling, which was the largest and handsomest peach on exhibition at the Fair. In Oregon this fruit is known as Oregon Cling.

California had an interesting collection of nectarines at this time, comprising eleven varieties, from the veteran grower, John Rock of San Jose. The most attractive of these were Darwin, Claremont, Golden, and Downton. Nectarines had been shown from other parts of the State for several weeks.

Plums comprised by far the most varied and attractive exhibits of September stone fruits. They stand shipment and keep well upon the tables, and nearly every State finds varieties which it can grow. Peaches pass from the shelves quickly, and a State which had a good collection one day may have had few or none the day following. But the peach displays were good, notwithstanding, and especially in view of the extreme drouth, which was widespread in 1893. The peach does not appear to be modified greatly in shape by the different climates, although there is a tendency for the Pacific fruits to develop a very prominent or even prolonged tip. Other fruits from the Pacific slope showed this tendency to elongate in a very marked degree. This was true also of the plums. The preponderance of rounded and soft-fleshed plums was observable in all the collections from the East, and even so far west as Colorado, but once over the mountains into Idaho, Washington, Oregon, and California, the long and hard prune-like types appeared. The Eastern fruits excelled in table qualities, but they lacked the size and shipping qualities of those from the West. In the collections from the Eastern States, the plates from Oceana county, in the Michigan exhibit, were most interesting. They came from one of the newest and most promising fruit regions of the East, and, contrary to general experience in plum culture, they thrive upon gravelly soils. It is evident, from a general study of the plum exhibits, that Lombard is more commonly grown in the East than any other variety. Considering the poor quality of this plum, this popularity is to be regretted; and although the tree bears well, the fruit is very liable to rot.

One of the novel features of the late plum exhibit was the large variety of native plums shown by the States of the upper Mississippi basin. As one sees these plums beside the varieties of *Prunus domestica* grown in the same regions, he is ready to confess that these natives are destined to play a very important part in the pomological development of much of our interior country. Something like fifty varieties were shown, mostly of the *Prunus Americana* type, although the Miner, or northern type of *Prunus hortulana*, was well represented. Iowa had a large collection, among which the leading varieties were Wolf, Miner, Wyant, Hawkeye, Pottawattamie, and Galena. In the Minnesota section many varieties were shown, all conspicuous for the beauty of their coloring. Here leading sorts were Forest Garden, Early Sweet, De Soto, Harrison's Peach. South Dakota had a large and varied collection, among which Barnsbeck, a new seedling Americana, was conspicuous.

The Japanese plums made some impression upon the fruit displays, especially the Kelsey, which was shown in enormous specimens from California. Ogon and Abundance were sent from several localities earlier in the season, and a few other varieties appeared. *Prunus Simonii* was sent in from a wide range of country—from Canada to Oregon. Although this fruit is often very bitter and acerb, most of the specimens on exhibition were nearly free from these qualities, and enormous and bright colored samples from Oregon were positively delicious. Canada, New York, Colorado, and Nebraska, sent specimens which were good eating, while some samples from Iowa were bitter, differences for which it is difficult to account.

The General Autumn Fruit Displays.—The pomological exhibitions culminated in the closing days of the Exposition, and gave final emphasis to the fact that America is preëminently a land of fruits. As early as the latter part of September the autumn fruits of the Northern States were shown in wild profusion. The rear wings of the Horticultural Building had never before looked so well, and the uniform excellence of the exhibits silenced criticism of the pomological displays. Many of the Northern States were not represented; the fault rarely lay with the fruit growers, but was rather due to lack of funds, which, upon one excuse or another, had been diverted from horticultural interests. Every foot of space in the pomological section of the building was now filled with exhibits. On Saturday, Sept. 9, California had a free distribution of fruit in front of its State Building, giving away about six carloads of grapes, plums, peaches, pears, and oranges, and some twenty men were kept busy dealing it out to the multitude.

Second to the display of citrous fruits from California, the Pacific Northwest arrested the attention of visitors. Idaho, Oregon, and Washington held a prominent place from the first, although Oregon exceeded the other two in the amount of fresh fruit exhibited. The fruits of this entire region are remarkable for their enormous size and high color, and particularly for the strange influence of climate which they show. All apples which, in the East, tend to be oblong in shape, show this tendency in a more pronounced degree here, and the apex becomes conspicuously ribbed and the calyx is usually larger. The varieties of apple which these States showed were familiar in name to eastern pomologists, though they were strange in appearance.

The great interior region was admirably represented by Illinois, Kentucky, Missouri, Kansas, Nebraska, Arkansas, and Colorado. Apples predominated, although pears and grapes were shown in variety. This great geographical region is the area of the comparatively coarser-grained apples of the Ben Davis, Janet, Rome Beauty, and Pippin class, although many fruits of excellent quality are grown. The displays impressed one with the great size of the specimens, and the prominence of the green and yellow under-colors. While red was prominent, it was of a coarser type than that seen in the apples of the Northwest Mississippi valley, and, though deep, was rather dull, and laid on in heavy splashes. The coloring usually lacked the fiery brilliancy of the apples of the Northeastern States and the delicate pruinose tints of Wisconsin and Minnesota. Kansas was particularly noticeable at one time for its excellent grape exhibit, the varieties numbering about 80. Illinois also had a large and attractive grape show.* Arkansas surprised visitors by the wealth of its apple display, and Kansas and Nebraska sustained their accustomed reputations. Canada made attractive additions to its fresh fruits, although still depending too much upon bottled fruits. The firm, hard, crisp apples of the Provinces and of Maine were conspicuous in these autumn exhibits.

The newer classes of Russian and other hardy fruits were shown in good variety by Iowa, Minnesota, and Wisconsin, and they were all remarkable for the high and delicate color of the skin. This was especially true of the apples of Minnesota and Wisconsin, which were among the handsomest fruits ever seen in any exhibition. In these States and South Dakota, crab-apples and native plums were particularly conspicuous. The large display from South Dakota was specially gratifying, and included apples, grapes, native and other plums, and tomatoes. Many of the apples in the collection were unfamiliar to Eastern growers; among well-known kinds are Ben Davis, Maiden's Blush, Plumb's Cider, and Blue Pearmain. Most of these Dakota fruits were from the extreme southeastern portion of the State.

A study of the autumn fruit displays showed that New York probably made the best exhibition, and the State held this position throughout the Fair. The fruits were not only remarkably well grown, but were in great variety. Careful attention was paid to nomenclature, arrangement, and to giving such incidental information as the intelligent visitor desires to have. The exhibit showed what is accomplished in one of the oldest States by thorough, and what may be called scientific, cultivation. There are many individual orchards in other States which are cultivated according to the best methods, but there is probably no other region of equal extent in America, where good cultivation and careful attention to all the newest facts and discoveries are so universal, as in New York State. The exhibits showed graphically the results of spraying, a practice now common with all the best growers of the State. High fertilizing was also apparent in many of the samples, and varieties difficult to grow were shown in perfection. There were on exhibition remarkably handsome and clean specimens of Cranberry Pippin, Jonathan, Fameuse, from Mr. George T. Powell of Columbia county, east of the Hudson, and a conspicuous placard bore this legend: "These varieties are peculiarly liable to attacks of apple-scab, and are often entirely unsalable. These have been thoroughly sprayed with Bordeaux mixture and Paris green. High fertilizing accounts for the brilliant color of the fruit." The State Experiment Station at Geneva showed average specimens of the old White Doyenne, or Virgalieu, and Seckel pears, both sprayed and unsprayed, and the differences were remarkable. The exhibit showed that the good old Virgalieu, which has all but gone out of cultivation on account of disease, can be grown as good as ever with the use of the spraying machine. New York excelled in fruits of high excellence, and many of the famous dessert fruits were shown nowhere else. Pears and grapes were especially conspicuous. Of the former there were over one hundred varieties of superior quality, and about two hundred varieties of grapes. In fact, in these two fruits—pears and grapes—New York really had no close competitors. Of apples there were over 250 varieties. Among the interesting samples were seventy varieties of apples from St. Lawrence county, shown by A. F. Clark and John Cline. This is the northernmost county of the State and is generally thought not to be adapted to fruit culture. All the finer kinds of berries, including about two hundred varieties of gooseberries, were shown in season; and apricots, peaches, plums, and other fruits were displayed in perfection. At one time, early in October, New York had on exhibition 1,225 plates of fruit, of which over 500 were grapes.

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*For a full account of the fruit exhibits of Illinois, see a recent "Report of the Illinois Horticultural Board of Control having in charge the Fruit Exhibit of the State," etc., by the secretary, Henry M. Dunlap, Savoy, Ill.

New York differed from nearly every other State in having made no attempt to attract attention by mere displays of quantities of fruits or of unusual or conventional designs. The Michigan fruits were very like the New York fruits in their natural features. New Jersey was the only State from the Atlantic slope which made a general display of autumn fruits.

Illinois was a very prominent exhibitor in the fall displays, as it had also been from the first. Aside from its displays in the Horticultural Building, it maintained a continuous display in its own State Building. This second display was particularly interesting in showing the extremely long season for fruits which this State enjoys. On exhibition from May 10 to July 30, were 42 varieties of strawberries; from June 1 to Aug. 9, 28 varieties of raspberries; from June 16 to Aug. 10, 26 varieties of blackberries; from May 28 to Aug. 16, 23 varieties of cherries; from May 26 to Aug. 16, 22 varieties of gooseberries; from June 1 to Aug. 12, 18 varieties of currants.

Thirty-six varieties of grapes came on the table July 4. The plums came in June 24, and were later shown in 22 varieties. Apricots were shown in six varieties from July 12 to Aug. 20. Peaches came in 38 varieties June 10 and increased later, as did the 36 varieties of pears, which commenced to arrive June 24. A good showing was made of last year's apples, which were kept in cold-storage and were shown alongside those of the current year's growth.

Iowa occupied a prominent place in the center of the south curtain, and its autumn displays were unusually good. Up to the first of October there had been exhibited about 400 varieties of apples, 20 of crabs, 60 of plums, 55 of grapes, 25 of pears and 10 of peaches.

Georgia was represented chiefly by the Kaki, or Japanese persimmon. Several varieties were shown by Mr. P. J. Berckmans, who also had pomegranates and enormous Kieffer pears. The kakis shown were named Hiyakume, Yiami-Gata, Among, Die-Die-Maru, Ko-tsura, Togarii-Gata, Yedo-Ichi, Myotan, Zengi, Hachega, Masu-Gata, Kerro-kume, and Tsuru-noko. Some of these were ripe when placed on the tables, while the last two named were still very green, showing that this fruit covers a long season. The differences in color, shape, and size in the varieties on exhibition indicated that there was sufficient variation in the fruit to adapt it to many uses and demands.

Nevada, also, made a display of extra good Bartlett and Clapp pears, with crab-apples, and other fruits. New Mexico also maintained a small early autumn display.

Pennsylvania appeared late in the season with a small but good collection of grapes, pears and peaches.

The most exact and scientific pomological exhibit in the Horticultural Building was a collection of grapes shown by T. V. Munson. Every species of American Vitis was shown by photographs of the fruit and seeds; by herbarium specimens of leaves and usually of inflorescence; by dried twigs, cut to show the diaphragms at the joints; roots; by fruits preserved in liquids; by sections of old trunks; and, finally, by young plants growing in pots. The exhibit comprised a comprehensive study of the genus, to which Mr. Munson has given himself for many years. From time to time he exhibited fresh grapes, showing the progress he is making in the origination of varieties, particularly in his unique crosses with the Post Oak grape (*Vitis Lincecumii*) of the Southwest. Several of these varieties occasioned much favorable comment from expert judges.

Cherries, although early to arrive at the Fair, were represented until late in September. A writer makes the following comment upon an interesting test of this fruit: "Upon one point in horticulture there would seem to be no room for a diversity of opinion: The great superiority of Western Pacific slope cherries over those grown in the East, in shipping and keeping qualities. About September 20, for the purpose of trying an experiment, Dr. Lewis, in charge of the Oregon fruit exhibit, gave me a plate of cherries of two varieties, the Bing or Bying, and the Napoleon Bigarreau. They had been received that day, and were in perfect condition, after a ride of 2,600 miles. I put them in a small box, with cotton wadding, and sent them to my home in Southern New York, about 900 miles from Chicago. A few days later I heard from them, and they were still perfectly sound and edible. It is safe to say that they had been at least eight days from the trees when eaten. There is a solidity and meatiness about these Pacific slope cherries that we of the East can not hope to rival. They are marvels in that direction, and though they are hardly as fine as our Eastern cherries in flavor, they are very good indeed."

The largest apple was claimed by various States and societies. The following extracts record some of the largest:

"By all odds, the largest and handsomest Porter apples I have ever seen, were sent to the New York exhibit by Mr. Rowland Robinson of Sodus, Wayne county, New York. The largest one of two plates measured 12¼ by 22½ inches, and the others were but little smaller. A plate of Fall Pippins contained one which measured 12¼ inches in circumference. The Porters were not only very large, but perfect in form, and free from all disfiguring marks, showing no traces of worms or scab. Another large apple was an Alexander from New York State Experiment Station, which measured 13 inches in circumference."

'Arkansas claims the largest apple, a Clapp's Mammoth, measuring 27 inches around and weighing 14 ounces, being the largest yet shown."

"British Columbia shows the biggest apple in the Exposition. It measures 15½ inches in circumferance, and is fair and clean. It came labeled Twenty Ounce or Cabashea, but I doubt the accuracy of the name. One is never sure, however, in naming fruit that is fanned by breezes from the Pacific. Either the soil, or the climate, or the combination of both, work marvelous changes, and old friends come to us so metamorphosed that we do not recognize them. This apple has the peculiar red color of the Beitigheimer—a color I have never observed in any other variety. It is not flattened enough to be of Beitigheimer shape, but it is a notable fact that all apples from the East, when grown on the Pacific coast, become elongated, and this in question is not more drawn out than I should expect. I place my judgment on record that it is the Red Beitigheimer."

There were a few exhibits of nuts in the second story of the north pavilion, comprising walnuts from California, and pecans. There was no general or consecutive display of the nut fruits, however. The most important displays in this line were those devoted to the pecan, because this is a fruit of American origin and one which has only very lately attracted the attention of fruit growers. Pecans were the subject of four small, but very interesting exhibits. The Stuart Pecan Company, of Ocean Springs, Mississippi, in which W. R. Stuart, author of *The Pecan, and How to Grow It*, is a leading spirit, showed a collection of varieties in jars. These varieties were Stuart, Van Deman, Columbia, Jewett and Beauty. B. M. Young, Morgan City, Louisiana, showed an interesting series of photographs of trees, flowers and nuts, and also specimens of the following varieties: Pabst, St. Martin, Miller, Vermilion, Frotscher, and many seedlings. E. E. Risien, San Saba, Texas, had a number of large and very fine varieties, which, however, were unnamed. He also had photographs showing the top-grafting of large wild trees. The trees are "topped" twenty or thirty feet high, in March, and buds are set the middle of June. The Swinden Pecan Orchard, of Brownwood, Texas, showed a picture of its pecan orchard of 16,000 trees, together with a collection of nuts and confections, and oil and soap made from them.

Raisins, prunes, Zante currants, and other prepared fruits, were shown in profusion by exhibitors from various States and countries, but a discussion of them is not germane to this account.

General Remarks on the Fruit Displays.—The fruit exhibition, particularly late in the season, was probably the most complete and best effort of the horticultural department. Yet even here the entire country did not respond to the efforts of the Exposition as it might have done. A few States and Provinces only, notably California, New York, Illinois, Oregon, Washington, Idaho, Missouri, Minnesota, Iowa, Wisconsin, Nebraska, Kansas, Arkansas, Michigan and Canada, made large and more or less extended displays, but these States do not represent the pomology of North America; and as for foreign countries, only New South Wales, Russia and Italy made any attempt to show fresh fruits. The most lamentable gap in the pomological department was the almost entire absence of exhibits from the Southern States. A few States did remarkably well, but the country as a whole certainly fell short of what was to have been expected of it, even in a comparatively poor year.

This was equally true of individual fruits. One expected a complete representation of those important fruits which have been developed within two generations from our native species. But not only were the raspberries, blackberries, native gooseberries, and even strawberries, sporadic in their representation, but there was no definite effort to show our native plums. Some table might have been devoted, the season through, to showing these fruits in all their variety, and from all parts of the country, for purposes of easy comparison. The visitor was impressed with the feeling that certain States are capable of making great exhibits; but there was little to show the relative importance of the various fruits in our national economy, and to illustrate their comparative peculiarities and variations. In other words, the proper basis for a comprehensive pomological display undoubtedly is fruit, and not States. Perhaps it would be difficult to interest the public without appealing to State pride, but it might have been possible to have secured sufficient overplus of special fruits to have made supplementary exhibits for the purpose of showing the whole progress and evolution and distribution of any one species or type. It would be worth considering, in future Expositions, if all the apples, for instance, should not be placed together, each State or country to have its own allotment of space. If this were accomplished with the leading fruits, the educational features of the show would be immeasurably increased, while the decorative features and State reputation would probably be augmented at the same time.

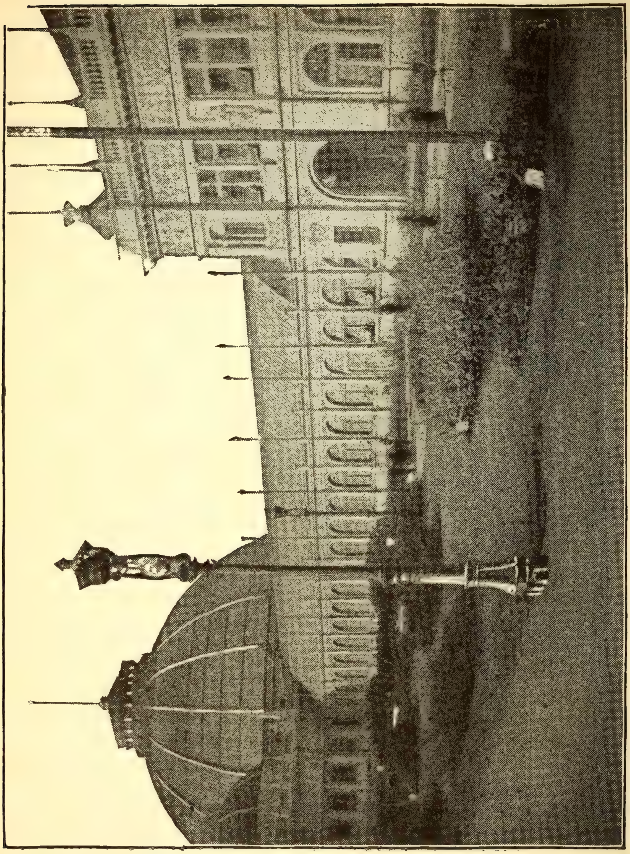
The viticultural displays were amongst the most decorative in the horticultural department; but, unfortunately, there was much beside genuine horticulture in them. They were made up largely of wines and brandies, subjects which belong to manufacture. Perhaps it would be well, in future shows, to divide grape interests into two parts, as is done by the Italians and others—viticulture, or grape-growing, and viniculture, or wine-making. There is certainly little more reason for including the manufacture of spirits under grape-culture than to group beer-making with hop-culture. All this, however, was a fault of the original classification, and it must be said that, in its way, the viticultural display was one of the best at the Fair. The autumn display of fresh grapes must certainly be numbered amongst the leading features of the Exposition.

3c. Environs of the Horticultural Building.—Areas with an average width of something over one hundred feet lay upon either side of the Horticultural Building. (See map, page 105). The area in the rear was bounded upon the back, next the margin of the Fair grounds, by the Annex greenhouses. The space in front of these houses was occupied by a miscellaneous lot of displays, the most prominent of which were a cone-like mound of cannas, yuccas and some other plants; an old-fashioned garden shown by New York, but which contained some new-fashioned things; a small display of young apple trees, which were a part of the nursery exhibit. Some of the ground was used for the propagating of annuals, which were used in various decorations. Early in the season, the border against the rear of the building was given to tulips, and later to dahlias and other plants. The arrangement of the rear grounds was strictly formal, and there was nothing, either in the arrangement or planting, of more than ordinary merit.

The Greenhouse Exhibits. — The greenhouse displays at the World's Fair were disposed, for the most part, upon the lawn in the rear of the Horticultural Building, although three of them were inside the building. The exhibits were not numerous, but they represented the recent improvements in construction, and they may be taken, as they stood, to indicate the present stage of our progress in greenhouse building. One familiar with the houses of twenty years ago saw great changes. Large glass, exceedingly light framework, the free use of iron in the construction, and the abandonment of the old point-and-putty system of glazing, were the chief innovations; and one might add, also, the construction of portable houses. The fears attending the use of iron for greenhouse construction have now subsided, or have been overcome. Rafters only a half inch thick and three inches deep, are strong enough to hold a roof thirty feet high, without a post. Glass was both lapped and butted in the various houses, although the lapped was more used. Except in some patent systems of glazing, wooden sash bars were still used. Some of these houses, particularly those erected by Lord & Burnham and Hitchings & Co., were used for plant exhibits, the former for various New York collections and the latter for Pennsylvania exhibits.

The two most comprehensive displays were those of Hitchings & Co. and Lord & Burnham, immediately back of the Horticultural dome. The former showed an admirable fancy palm house, 34x50 feet, and 30 feet high, which was free from all posts and troublesome braces. A greenhouse wing, 19x35 feet, was attached at the rear. The entire plant, with slate and tile benches, heated, can be built for $8,500. Lord & Burnham showed a nest of three houses and a connecting workroom. The largest house, of which the centre was a lily tank, was 25x50 feet. The greenhouse wing was 20x33½ feet, and the rose house 18½x33 feet. This plant complete, heated, can be built for $6,000. Two other houses were also shown by Lord & Burnham, one a curvilinear greenhouse, 15x30 feet, costing $900; the other, a portable house 10x20, costing $400. Hitchings & Co. also had two sections of a portable iron-frame greenhouse in the dome gallery of the Horticultural Building. A villa conservatory was shown upon the lawn by Thomas W. Weathered's Sons, and a portable wood and iron-frame house was erected by the same firm in the south floral curtain of the Horticultural Building. This latter house was 11x27, and can be built, complete, for $575. The glass was set in light sashes, which were bolted and screwed to the framework. John C. Moninger, of Chicago, had a small house, 20x30 feet, upon the lawn, to show the use of cypress lumber in the construction of a house; and in this house Mr. J. D. Carmody, of Evansville, Indiana, displayed his sectional boiler for hot water, and his New Departure ventilating appliance. The Hellewell system of glazing was shown in a small portable house upon the lawn, built by Mr. H. B. Hardt, of Chicago. This system, which is an English patent and not in use in this country, is a zinc sash bar and cap, the cap being screwed down into the bar in much the same manner as our common wood sash bar and cap for butted glass are used. This system allows of either lapped or butted glass. In the north floral curtain of the Horticultural Building, A. Edgecumbe Rendle & Co. showed two patent systems of glazing, the "Acme" and the "Paradigm." These systems consist in the use of metal sash bars, fitted in such shape that the glass slides into them and is held secure without resort to putty. The sash bars are quite independent of the structural framework of the house. The system can be used either upon wood or iron-frame houses, and it is particularly adapted to heavy skylights. The Rendle Co. also had two iron skeleton houses upon the lawn to show the method of building iron frames.

The most novel of the various greenhouse exhibits were the two curious structures made of the Falconnier glass bricks. These bricks are essentially bottles without an opening, and blown in such shapes that they fit well into the designs of the builder. As a rule, the interior hollow is about large enough to hold a quart of liquid. The bricks are generally flattened, but the two broad sides are usually raised into a cone-like shape, in order to present various surfaces to the incident rays of the sun and to break the force of hail and shocks. The narrower sides are two or three inches wide and are trough-shaped to hold the cement or mortar with which the bricks are joined. The bricks are laid by a mason in much the same manner as



PORTION OF EAST FRONT OF THE HORTICULTURAL BUILDING IN AUGUST, SHOWING BEDS OF CANNAS.

ordinary bricks are laid, and the entire arch of the greenhouse roof supports itself without posts, rafters or braces. The roof and sides are, therefore, a continuous sheet of glass. These bricks have been well tested in parts of Europe, and they are found to conserve heat one-half, to render the temperature of the houses uniform, and to prevent all scalding of the plants. Considering the fact that no framework is required, a house can be built of this material about as cheaply as in the common fashion. Most greenhouse men who saw the two little exhibition houses at Chicago must have felt that they were too dark for the growing of roses and the forcing of vegetables; but the exhibitors say that for such houses the bricks are made of clear bright glass, while these were made of bottle glass. It is the desire of the inventor to manufacture the bricks in this country. They are recommended for skylights, porch roofs, photographers' studios, propagating pits, and the like. These bricks are the invention of Mr. Falconnier, of Nyon, Switzerland.* The prices quoted in France last year were twenty-four francs per 100, and about fifty are required for a square metre.

The Front Esplanade of the Horticultural Building. Cannas.—The extreme front of the Horticultural Building stood something over a hundred feet west of the lagoon, opposite the wooded island. The exterior borders of the lagoon, except the extreme north-eastern and southern arms, were bounded by a perpendicular wall some four or five feet high, upon which was placed a heavy balustrade. This architectural feature served the double purpose of blending the lagoon with the formal environs and of appearing to set the buildings upon a platform or terrace, thereby increasing their height and importance. The spaces, or level terraces, between this railing and the contiguous buildings were essentially esplanades, and some of them were very effective. The central and important portion of the esplanade of the Horticultural Building was an area about sixty feet wide and extended the length of the building—1,000 feet. Upon the east it was bounded by the broad gravel walk skirting the lagoon, and on the west by another thoroughfare. The centre piece of this esplanade was a lily tank (A, p. 105) with masonry walls, containing forty species and varieties of water-plants, shown by William Tricker, of Staten Island. Nymphæas predominated, of which prominent ones were *Nymphœa Devoniensis* var. *superba*, a plant with rich bronze leaves and pink-red flowers; *N. gracilis*, with its starry, sharp-petaled, white flowers standing a foot or more above the leaves, and *N. Zanzibarensis* and the varieties *rosea* and *azurea*.

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*Annals for 1892, 361.

The water-poppy, *Limnocharis Humboldtii*, also made a show with its saucer-like sulphur flowers. Some good papyrus plants stood at the angles of the pond.

Upon either side of this lily pond were two nearly square areas of sod (A′ A″), with flower beds, beyond which, in each direction, a long parterre (B C) stretched away nearly 400 feet. These long areas, extending north and south, were simply quiet, unornamented lawns early in the season, and it was the hope of the landscape department that they might be left undisturbed in order to enforce the effect of the lagoon terrace and add a proper dignity to the great building. But land was needed for parterres, and in June the sod was cut into seventy-nine beds, all but three of which were planted to cannas. This great display of cannas, extending over a total length of a thousand feet, was the most conspicuous feature of the environs of the Horticultural Building in autumn. There was some chance for criticism in the arrangement, for the many small beds gave a spotty effect. If the same plants had been massed into a broad central avenue, or even into two narrow marginal avenues, the effect would have been more continuous and more impressive. The plants were late in going into the ground, and the soil was sandy and poor; yet the display, as a whole, was very bold at the opening of September, and later, and it certainly had great merit. The varieties were not numerous, but they represented the best of the new French or dwarf cannas, a class of plants which has been greatly improved in very recent years, especially in all the best qualities of bloom. In the two small areas (A′ A″) upon either side of the lily tank, J. C. Vaughan showed eighteen beds of cannas—the central bed in the south area being the best single bed, probably, in the collection. The central portion of this bed was occupied by a heavy planting of Florence Vaughan, which bears a very large, yellow flower, thickly and uniformly spotted with brown. About this was a band of J. C. Vaughan, a dull red flower and dark bronze foliage. This was skirted by George W. Childs, a variety of the Madame Crozy type, but bearing more gold upon the petals. The companion bed in the north area had a center of the excellent J. D. Cabos, with outer bands of Explorateur Crambel and Florence Vaughan. Among other varieties shown by Vaughan were Egandale, a very dark leaved and dull red variety of great merit, and Mademoiselle de Crillon, the nearest approach to a pure yellow canna upon the grounds.

The chief interest in the canna exhibits, however, attached to the competitive displays of New York and Pennsylvania. New York occupied most of the south parterre (C), nearly 400 feet in length, and Pennsylvania had its twin upon the north

(B). The varieties were essentially the same in both. F. R. Pierson & Co. supplied all the New York plants. The best single bed in this collection was a large circular mass of Capitaine P. de Suzzoni, one of Crozy's varieties introduced to the American trade in 1892. It is a tall and bold grower, holding its long clusters of large, yellow, brown-spotted flowers well above the leaves. The Pennsylvania plants were furnished by Henry A. Dreer and Robert Craig. Altogether, Madame Crozy was probably the best canna in the entire collection, especially when one considers its long season of bloom and good constitution. Star of '91, the American variety of this type, did not appear in the collections, except in a small bed shown by Vaughan, an indication that it lacks staying qualities. The other best cannas in the collection were: J. D. Cabos, foliage dark bronze, flowers copper-yellow; Paul Marquant, pinkish salmon-red, introduced here in 1892; Mademoiselle de Crillon, clear yellow, with a darker throat, but flowers small; Capitaine P. de Suzzoni, already described; Francois Crozy, salmon, very faintly bordered with gold; Florence Vaughan and Egandale, already described; Alphonse Bouvier, dark red, tall grower, introduced in America in 1892, and Miss Sarah Hill, a low plant with very dark, almost maroon-red flowers, also introduced in 1892. Other prominent varieties were: Count Horace de Choiseul, brilliant red; Paul Bruant, light red; Explorateur Crambel, dull red; Charles Henderson, dull red, lowest petal blotched; Secretary Stewart, rich red; Enfant de Rhone, salmon-red; Duchesse de Montenard, lemon, spotted red; Baronne de Renowardy, dull rose-red, introduced last year by Dreer; Gustave Sennholz, light red; Secretary Nicholas, dark salmon-red; Statuaire Fulconis, red, introduced in this country last year; Edouard Michel, bright salmon-red; The Garden, with large, bright salmon-red flowers; Little Gem, much like Star of '91, except that the flowers are smaller and a trifle lighter, with more yellow inside. At the south end of the south parterre (C) Pitcher & Manda showed five choice beds of seedlings, and at the north end of the north area (B) H. P. Potter, of Wilmington, Delaware, planted a New American seedling which reminds one of Florence Vaughan, but it has a smaller flower, which is more densely spotted with red. Both ends of this north area were introduced by a large keystone of carpet bedding, and the north end of the New York display had a shield made of succulents.

At the rear of this central area, lying against the floral curtains upon either side of the dome entrance, were the two spaces (D E) which were devoted to pansies early in the season. Later on, these beds were filled with cannas and ricinus, furnished by Pierson. Upon either end of each of these areas were two small beds of coleus and *Solanum integrifolium* (better known as *S. coccineum*) and some carpet beds of alternantheras, house-leeks and agaves.

Miscellaneous Plants.—Cactus-like plants were well represented at the Fair, and this was a fortunate circumstance, since America is the home of the cactus. A dozen great specimens of *Cereus giganteus* stood in front of the Horticultural Building, and others were placed with a miscellaneous collection of cacti in the yard of the Territorial Building occupied by Arizona, Oklahoma and New Mexico. The largest collection of cactus-like plants was made by A. Blanc & Co., in the two parterres (F, G, each 117 feet long by about 25 feet wide) against the pavilions of the Horticultural Building. Mrs. Anna B. Nickels made an excellent display in the south wing of the building (part of area 15, plan on page 71), and the Mexican Commission had a collection particularly rich in round cacti, in the north wing (plot 7).*

Upon the north of the Horticultural Building, a narrow border was devoted to exhibits of various French plants, chiefly clematis and gladiolus. The display of gladioluses was shown by Victor Lemoine, of Nancy, and Forgeot, of Paris. Lemoine, who is known to gladiolus fanciers throughout the world, showed over sixty varieties, about twenty-five plants of each. The place proved to be a windy location, and most of Forgeot's plants suffered from the storms; and Lemoine's, which were tied to cords, were also injured. Yet both collections passed the height of their bloom before the inclement weather appeared, and they attracted much attention. Probably few people, even among flower-lovers, were aware of the great variety and beauty of Lemoine's types of gladioluses until they saw this collection at the World's Fair.

About the Woman's Building, to the north of the Horticultural Building, French firms showed a variety of nursery plants and specimen shrubs; and Vilmorin, Andrieux & Co., of Paris, showed beds of various annuals about the little White Star Line Building, between the two. The plants in these beds were pinks, coreopsis of two or three kinds, calendulas, marigolds, a gaillardia called Pictamixta, snapdragons, eschscholtzias, helichrysum, *Chrysanthemum carinatum*, and the like. The most prominent plants about the Woman's Building were the rhododendrons of Moser and Croux, which are elsewhere described, small palms, and various specimen enonymuses and

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*For a fuller discussion of the cactus exhibits, see *Garden and Forest*, vi. 429.

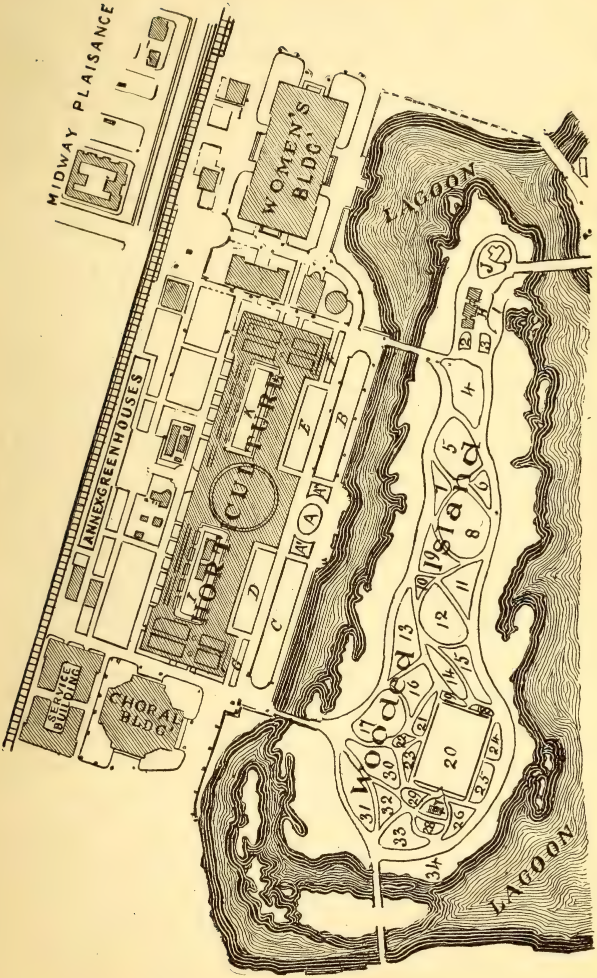
fancy lawn shrubs. Here the neat yellow and brown pea-like flowers of *Cytisus* (or *Genistă*) *Andreana* were conspicuous until the middle of June. These plants were exhibited by Croux, of Sceaux, and Moser, of Versailles. The former showed only low plants, but Moser had an interesting group of standards worked four or five feet high on laburnum stocks. This plant deserves greater prominence in America. While the individual plants in these French exhibits were excellent, their arrangement was very poor. The low plants were often placed behind the higher ones, and the entire planting had a disconnected and scattered effect which had no relation to the building or the landscape.

In the small private greenhouses in the rear of the Horticultural Building, many good plants were shown. The caladiums and other plants shown in the Pennsylvania display in the house erected by Hitchings and Co., were much admired. One of the best displays of bloom under glass was the Griffin strain of tuberous begonias, shown in the Lord & Burnham greenhouses, by the New York Florists' club. The flowers were uncommonly large and bright, and they comprised a great variety of color. In the same series of houses was a rose compartment, in which were growing the following new varieties: Senator McNaughton, exhibited by Robert Craig, a delicate creamy-white sport of Perle des Jardins; Kaiserin Augusta Victoria, and Madame Caroline Testout, by Ernst Asmus; and two benches of Mrs. W. C. Whitney, by John N. May. Another offshoot of the Lord & Burnham houses had an excellent small collection of ferns and orchids from Frederick Sholes. The main house of the series had a tank in which various rare nymphæas and *Victoria regia* were grown. This house had an excellent lot of crotons from the Jay Gould estate and from William Bayard Cutting. There was also a good plant each of *Aristolochia ornithocephala* and *A. Sturtevantii*, the former long in abundant bloom. These various collections were made under the auspices of the New York Florists' club.

Various plants, aside from the early exhibits of primulas, cinerarias and cyclamens, were shown in the Annex houses behind the Horticultural Building. None of the later collections attracted much attention, however, except a most remarkable lot of fancy caladiums, from Mr. Lizt, of Rio Janeiro, which were shown late in the season. This was undoubtedly the finest display of these plants ever made in the United States, although a collection of unusual merit from George W. Childs was long shown in the Pennsylvania section of the Horticultural Building. The Lizt caladiums were remarkable for the exceeding thinness of their leaves, many of them being so transparent that ordinary print could be read through them. They also showed a wide range of markings, and of colors running from creamy white to maroon.

Aquatics.—Aquatic plants at the World's Fair were shown in four places—the native species in the lagoon borders, in the large tank in front of the Horticultural building (described on page 99), the small collection shown under the auspices of the New York Florists' Club in the Lord & Burnham greenhouse (see last page), and the tank in the south court (I) of the Horticultural Building. The last was filled by E. D. Sturtevant, of Bordentown, New Jersey. The four corners of this tank contained clumps of papyrus, and the wild rice, *Zizania aquatica*, was also prominent. Clumps of *Eichornia* (or *Pontederia*) *crassipes* and the water-poppy were used with good effect. *Limnanthemum Indicum* bore white flowers freely, and proved to be a desirable plant. *Sagittaria Montevidensis* was long in bloom. The variegated form of *Scirpus Tabernæmontanus* was very effective. The nymphæas were especially good, and a mere list of them is useful as an inventory of available species for small ponds: *Nymphæa marliacea*, with its varieties, *chromatella*, *rosea*, *carnea*, and *albida; N. Sturtevantii*, *N. rubra*, *N. dentata*, *N. Zanzibarensis* and varieties *azurea*, *rosea* and *superba*, *N. Devoniensis*, *N. pygmæa* and variety *helveola*, *N. candidissima*, *N. gracilis*, *N. Breakleyi*, var. *rosea*, *N. odorata*, var. *sulphurea*.

3d. Interior of the Wooded Island.—The Wooded Island was the one free and native feature of the great Fair, an emerald jewel set in the midst of a most dazzling wilderness of architecture. As seen from the outside, one could scarcely believe that it was made for the occasion within a few months. The borders were as sinuous and intricate, and yet as simple in feeling as those of any wild, quiet lake which one may come upon in an outing. The interior portion, however, was a nursery, and it had no true landscape effect. The exhibits were so numerous and unlike each other that they possessed great value as mere collections; and a mere annotated catalogue of the contents is worth record. The map shows the outlines of the island. The entire area is between sixteen and seventeen acres. A belt about the outside, varying from a few feet to a hundred feet wide, was under the management of the landscape department. This is the area outside the outer walk. Between these two longitudinal walks an intricate network of cross-walks divides the space into areas devoted to various exhibitors. At the north end of the island the Japanese established headquarters, and the areas numbered 1, 2, 3, 4 were garden spaces belonging to them. The so-called


MIDWAY PLAISANCE
WOMEN'S BLDG'
LAGOON
HORTICULTURE
ANNEX-GREENHOUSES
SERVICE BUILDING
CHORAL BLDG'
Wooded Island
LAGOON
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B
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PLAN OF HORTICULTURAL AREAS. (For key to the island, see pp. 106–108; to other areas, pp. 96–104.)

Japanese garden is at 1, a piece of construction which, as pointed out in the sequel (p. 124), is by no means typical of Japanese garden art. Plot 5 was taken by Germany, with a collection of ornamental plants furnished by several firms. The most conspicuous plants early in the season were roses, especially the standard or tree plants. Later on, stocks and asters, montbretias, single dahlias, tuberous begonias, excellent border carnations, Quedlinburg phlox and zinnias were the chief plants of interest. The dwarf dahlia called Alba imbricata, shown by Albert Brandt, of Elbing, was particularly good. The plant grows from a foot and a half to two feet high, with very double pure white flowers in profusion. The German exhibit was backed up by a mixed collection of shrubbery, which was planted by the Fair managers. Plot 6 was filled by the Dingee & Conard Company with a large bank of hydrangea, bordered by a loose belt of clematis. The same firm occupied the center of plot 7 with a clump of tamarisk, around which was a plantation of hydrangea and a border of clematis. The borders of this area were given to various dianthuses by C. Eisele, of Philadelphia. Border carnations and *Dianthus Heddewigii* were prominent. Plot 8 was also taken by Dingee & Conard, with a mixed shrubbery, comprising hydrangea and *Rosa rugosa*, bordered with *Lobelia syphilitica* and its variety *alba*, and beds of pinks in the foreground.

Plot 9 was open greensward. No. 10 was assigned to W. W. Wilmore, of Denver, who showed a large variety of single and double dahlias—the best, probably, at the Fair. Plot 11 was filled with big sunflowers by the Bureau of Floriculture, but the severe drouth interfered much with its beauty. The idea was a good one, however, for it enforced the yellowness and warmth of the American summer and autumn. Area 12 had three large beds of herbs by Rea Brothers, of Norwood, Massachusetts, who made a display of the excellent *Œnothera Youngii* and sunflower-like composites. Masses of native asters were also prominent, as also were perennial phloxes, *Eryngium amethystinum*, *Zauschneria Californica*, *Pyrethrum uliginosum* and "The Pearl" achillea. Part of this area was occupied by Ellwanger & Barry with a shrubbery, in which hydrangea, variegated and cut-leaved elders, *Prunus Pissardi* and phloxes were most conspicuous. This firm also filled plots 14 and 15 with a general collection of ornamental nursery stock, which was the best display of its kind in the Exposition. Pitcher & Manda made by far the largest and most varied display of herbaceous plants. There were over two hundred species and varieties in bloom in the later days of the Fair, among which the most prominent things were pyrethrums in variety, native sunflowers and similar composites, *Boltonia glastifolia*, *Gaillardia grandiflora*, *Coreopsis lanceolata*, *Hibiscus Moscheutos*, var. *albus*, and masses of datura, phloxes, asters, zinnias and pinks. The firm occupied a portion of plot 12 and all of 16. Area 17 was taken by B. A. Elliott Co., of Pittsburgh, with beds of strong plants, like native sunflowers, *Sedum spectabile*, *Monarda didyma*, delphiniums, peonies, perennial phloxes, *Hibiscus Californicus*, dahlias and eulalias. *Wahlenbergia grandiflora* was one of the pleasing plants in this exhibit. George Achelis, of West Chester, Pennsylvania, showed a clump of ornamental nursery stock here, comprising some excellent dwarf thuyas. Nos. 18 and 19 were small areas, occupied by Jacob W. Manning, of Reading, Massachusetts, with choice native and other flowers. Here were excellent plantings of *Helenium autumnale*, *Aster Novæ-Angliæ*, *Veronica spicata*, *Eupatorium ageratoides*, *Coreopsis lanceolata*, *Boltonia latisquama*, and other self-colored flowers. In plot 18, W. C. Strong, of Waban, Massachusetts, showed Dawson and Wichuriana roses, and Dennis Zirngiebel, of Needham, Massachusetts, had an excellent display of pinks of the carnation type, many of which were single. Plot 20 was the rose-garden, which is described in the following pages. When the rose-bloom began to fail, China asters, balsams, snapdragons, gladioluses, coreopsis and other annuals filled the spaces and borders of the garden.

Plot 21, alongside the rose-garden, was occupied with German exhibits, including tea roses, dwarf and other dahlias, cannas, and the Japanese climbing cucumber, the only kitchen-garden vegetable growing at the Fair. In groups 22 and 23 New York exhibitors showed, among some nursery stock, a collection of Japanese irises and other plants. No. 24 contained plantations of *Hibiscus Californicus* and peonies, the exhibitor being W. F. Bassett. No. 25 was given to the displays of the Kissena Nurseries, Flushing, Long Island, containing chiefly American grown azaleas and rhododendrons. In No. 26, Anthony Waterer showed the excellent azaleas described in succeeding pages; and here, also, was a large rhododendron exhibit by Fred Kelsey. Plots 27 and 28 were sodded areas surrounding the garden tool-house, and they contained various small plantings of rhododendrons and some specimen plants. Pitcher & Manda occupied No. 29 with rhododendrons and beds of lilies, gladioluses and tigridias. Plot 30 was given to azalea displays of Joosten & Co., representing Dutch growers, and to various exhibits of nursery stock and roses by Joosten, Dekker, and the Phœnix Nursery Co., of Bloomington, Illinois. Plot 31 was also devoted to Dutch azaleas and bulbs. Vilmorin Andrieux et Cie., of Paris, and Cannell & Sons, of England, made good shows of dahlias in plot 32. Plot 33 held a Belgian display of azaleas. It also contained a glowing piece of carpet-bedding in the form of the "Harp of Erin," contributed by Eileen Donlan, of New York, under the auspices of the Gaelic Society. The skeleton of the bed was made of house leeks (*Cotyledon secunda glauca* and *C. sempervivum*) and *Alternanthera paronychioides*, and the reliefs were furnished with "Shamrocks from Erin's green hills." This Shamrock was *Trifolium repens* (white clover). Beyond the outer walk at the south end of the island (34), Fred Kelsey showed an interesting plantation of imported evergreens, kalmias and other ornamental specimen plants.

In general, the ornamental effect of the island was good, considering the haste in which it was prepared, the poor soil and the dry season. It was a matter of surprise that so many of the exhibitors were foreigners, who must have taken great pains to accomplish so much at such distance from home. It was gratifying to find that great prominence had been given to native plants in the floral effects. Some of the most conspicuous exhibits upon the island will now be described, with incidental references to collections of similar kind in other parts of the Fair grounds.

Azaleas.—The early shows upon the island were the azaleas and rhododendrons, which were a source of astonishment to most visitors. During the third and fourth weeks of May, azaleas excited more comment than any other portion of the floricultural exhibits. The number of varieties shown, both indoors and in the open, was very large, and the flames of color quite eclipsed the less showy plants. Azaleas have never won wide popularity in America, especially the Ghent varieties, which are adapted to outdoor cultivation. This scarcity of azaleas in lawn planting is commonly attributed to the severity of our climate, and it is true that many of the imported varieties are not adapted to our circumstances; but this very lack of adaptation is, no doubt, due to the almost indiscriminate importations of foreign kinds. Among all the azaleas upon exhibition at Jackson Park only one lot was American grown. This was from the Parsons' nurseries on Long Island. If greater attention were given to the propagation of hardy kinds by our own nurserymen, the time could not be far distant when sufficient varieties for all purposes should be obtained. If one may judge from the almost unanimous surprise and interest which the beds of hardy azaleas elicted from the thousands of visitors at the World's Fair, the market for successful varieties could be easily extended.

Among the outdoor azaleas, the largest collection was one of 116 varieties, by the Boskoop Holland Nursery Association, represented by C. H. Joosten, of New York. This occupied a conspicuous position on the island (plot 30), and as several varieties were freely duplicated it made a most remarkable blaze of color, which was conspicuous from many points beyond the lagoon.

Other collections of hardy azaleas in the open ground were those of Ch. Vuylsteke, Belgium, fifteen varieties; about a dozen varieties from J. C. Vaughan, Chicago; a small collection from Ellwanger & Barry; thirteen varieties from Moser, of Versailles, near the Woman's Building, and the American grown plants from Parsons, comprising twenty-five varieties.

The most unique, and in many respects the most valuable exhibit of deciduous azaleas was a display of seedlings made by Anthony Waterer, of Knap Hill, near London. These plants are seedlings of *Azalea mollis*, *A. Sinensis* and *A. occidentalis*, and they are remarkable for the great variety and brilliancy of color and free habit of growth. It is expected that these azaleas will prove hardy in the Northern States. Mention must also be made of a good collection of Ghent azaleas from Mr. Vuylsteke, which were forced into bloom in the Horticultural Building early in May. These were very effective.

The Japanese showed some interesting azaleas. The most striking ones were large and free growing bushes, three to four feet high, of dull pink-red, single flowered *Azalea Indica.* These are used along the walks in the Japanese garden in the Horticultural Building, and again in the Japanese garden on the island. On the island a white flowered bushy azalea was growing, which is a free growing form of *A. Indica.* Very diminutive, small leaved and small flowered azaleas were freely used in the garden indoors for borders in much the way in which we might use box. These azaleas were said to be *A. Indica.* Their flowers were usually single and self-colored. One variety attracted attention from its very small, greenish-white flowers. It is called Mitsusomekuruma. About twenty named kinds of these diminutive azaleas were shown. Several varieties of the Ghent type were also on exhibition. There were two exceedingly curious forms, in which the corolla was reduced to five separate and long strap-shaped divisions. In one instance, of the mollis type, the petals were red and spotted, and the stamens were wanting. In another, of the Indica type, the petals were dull pink-red, and the long red filaments were entirely barren of anthers, giving the flower a strange, spidery look. The Japanese know the deciduous azaleas as Tsutsuji, and the Indian type as Satsuki and Kirishima, the former name denoting a late, and the latter an early class.

Rhododendrons were the most conspicuous displays on the grounds during the first days of June. Nothing can be more showy than a mass of rhododendrons, and, unlike many other showy plants, they carry an air of massiveness and stability which makes them impressive in habit. They are the most architectural of the plants which can be made to endure our northern climate, and it was, therefore, a happy thought with Mr. Olmsted that he should have banked nearly six hundred of them against the long architectural terraces in the basin, or the magnificent space which lay between the Manufactures and Agricultural Buildings, headed by the noble Administration Building, and constituting what was known as the Court of Honor. The plants used in these banks comprised a long list of varieties, and the sizes and colors were arranged with bold effect. The masses were four in number, two lying against the terrace of the Manufactures Building on the north of the basin, and two against the Agricultural Building on the south. The plants were entered as competitive exhibits, although made to form a part of a landscape picture. Of the plants in these long masses, Anthony Waterer contributed 229; Moser, of Versailles, 62, and the Belgian commission 267, making a total of 558 plants, nearly all well bloomed.

Unfortunately, the other rhododendrons were widely scattered. The greater part of the exhibits were thrown into the southern portion of the island, with little reference to landscape effect, a large formal plantation extended across the north front of the Woman's Building, and some of Moser's best specimens were flowered under the dome of the Horticultural Building, where they attracted great attention. The best effect in these various plantations, all things considered, was undoubtedly that obtained on the terrace banks in the basin, although it was necessary to screen them from the sun by a temporary awning. Aside from these plants which Mr. Olmsted used for architectural effect, the rhododendrons were under the immediate charge of the Horticultural Department.

The rhododendron exhibits may be roughly grouped under two classes for the purposes of this account—small or young plants, and large ones (including standards). The small plants were shown by the Boskoop Holland Nursery Association in 102 varieties; Blaouw & Co., Boskoop, Holland, 56 varieties; W. Van Kleef & Sons, Boskoop, 35 varieties; Parsons, Long Island, 16 varieties; T. J. Seidel, Dresden, five new varieties, and a small collection by Ellwanger & Barry. The plants in these collections ranged from one to three feet high, and there was little or no attempt to train them to a single trunk, although Parsons' plants, which were the only American grown rhododendrons in the entire exhibition, were somewhat larger. A conspicuous variety in the Dutch exhibits was the mauve

R. Catawbiense. This was used to excellent effect in the Kleeff exhibit as a backbone or center of a long and thick clump.

There were excellent specimens of standard rhododendrons shown by Fred Kelsey (plants from John Waterer) and M. Moser, some of the tallest in the former collection standing eight or nine feet high. Very strong plants, in bloom, were shown by Anthony Waterer, England, in 93 varieties and 15 seedlings; Moser, in 69 varieties; Croux & Son, Sceaux, near Paris, 49 varieties; Fred Kelsey 41 varieties; Pitcher & Manda, 14 varieties; and the Belgian Commission, 50 varieties. The Belgian plants were contributed by Ch. Vuylsteke, Desmet Brothers, Alexis Dallaire, and the Horticultural School, all of Ghent or its vicinity. It will be seen that in the excellent rhododendron shows, the Exposition was indebted to the enterprise of foreign nurserymen, for all the plants—with the single exception of the small and comparatively unimportant collection from Parsons—were brought directly from Europe for purposes of exposition. Some of Moser's plants were fifty years old and were worth as many dollars, and some of the large plants in the Kelsey and Pitcher & Manda (Waterer) exhibits sell in England for seventy-five dollars each. The French plants, especially those from Moser, were the most perfect in form of any on exhibition, and the John Waterer plants were the largest, but, taken all in all, considering hardiness a prime factor, no collection surpassed that of Anthony Waterer, if, in fact, it equaled it. Without exception, the collections of all foreign exhibitors were marvels of vigor and profuseness of bloom, especially when one considers the journey to which they had been subjected, and the fact that they were all planted in the spring of 1893. When the Kelsey collection came into bloom, the plants were massed under a large tent near the rose garden, where they attracted much attention.

One of the most interesting displays of rhododendrons was a collection of 55 large plants, in boxes, of *R. Californicum*, about the Washington State Building. This species has recently been designated as the State flower by the legislature of Washington. The plants were received late in May, in rather poor condition, having been three weeks on the way in a dark car, but they rallied and made some bloom. The species occurs locally in Washington, especially about Seattle and the base of Mount Hood. It forms dense plantations, four to eight feet, and even fourteen feet in height. The flowers vary from pink-white to rose.

Altogether, this was undoubtedly the best display of rhododendrons ever held west of the Alleghanies. Although the rhododendron is a captious plant in our climate, it must be remembered that one of the best species is native here, and that many varieties can be relied upon with tolerable certainty, even in trying places.

Plants in Bloom in Early Summer.—The last of June a great variety of plants came into bloom at the World's Fair, although there were no masses which could compare in boldness of effect with the azaleas and rhododendrons of a month earlier. The only prominent bloom alongside the Horticultural Building at that time was the pansy collection, which was then in good condition. The pansies seem to have fallen short of expectations in size and brilliancy, but they were, nevertheless, attractive, because of the enormous number of plants. The thin partitions of grass which separated the exhibits in the largest beds grew tall and loose, and gave the beds a weedy and unkempt appearance.

The greatest show, after the rhododendrons, was made by peonies, which were shown in large assortment by Cannel, of England, and also by B. A. Elliott, Ellwanger & Barry, Pitcher & Manda, and in the Japanese Garden. At the close of June, the Canterbury bells, which afforded a temporary filling about shrubs and unoccupied borders, were making a great show. A variety of Stocks was used for similar purposes, especially in the German section; and aquilegias were pressed into like service.

The most conspicuous herb, aside from the peonies and Canterbury bells, was *Œnothera Youngii*, which was used for a dense border about two large beds of Rea Brothers, Norwood, Massachusetts, and also by B. A. Elliott, of Pittsburg. This is a strong plant, with firm, shiny foliage, growing to a height of two feet and bearing a profusion of bright lemon-yellow flowers, which remain open throughout the day. The large exhibit of herbaceous plants made by Pitcher & Manda, began now to give abundant bloom. Among the prominent flowers in this exhibit, late in June and early in July, were pyrethrums in variety, *Gaillardia grandiflora*, *Coreopsis lanceolata*, *Papaver nudicaule*, *Dianthus barbatus*, *Astilbe Japonica*, *Tradescantia Virginica*, *Tunica Saxifraga* and forget-me-nots. Perennial phloxes were coming into bloom in a number of exhibits. Rea Brothers showed a variety of aquilegias, lychnises, *Geranium Ibericum*, *Geum miniatum* and pentstemons and delphiniums. *Kalmia latifolia*, from European growers, bloomed profusely upon the island, and also about the Woman's Building, and it must have been a revelation to thousands of people who have never seen our mountain laurel in its natural haunts.

A second part of the floricultural display upon the island is that which was used to accentuate the wooded margin of the lagoons. As seen from the outside, the island was intended to have a wholly wild and natural appearance, but from the inside the borders were designed to look somewhat more trim and gardenesque. It requires the nicest taste to introduce flowering herbs into a wooded border without overdoing it. The faintest suggestion of color here and there gives a truer effect than bold and protruding masses, for it is then properly subordinated to the spirit of the composition, while it is enough to give a feeling of completeness and finish. These flowering plants were introduced into the borders, against the shrubbery, with most dainty effect, and one was surprised to see what interest such frugal plantings may add to a landscape. J. C. Vaughan contributed a running exhibit to these borders. Among the plants which gave very pleasing effects were the following familiar species: Pinks, candytuft, wallflower (hesperis), pyrethrums, bachelor's buttons, foxgloves, sweet williams, daisies (bellis), bleeding hearts, dusty miller (*Lychnis coronaria*), wild thalictrums, *Saponaria ocymoides*, *Geum atrosanguineum*, forget-me-nots, corn poppies, *Papaver nudicaule*, pink yarrow, *Anemone Pennsylvanica*, Canterbury bells, irises, perennial phlox, *Lythrum Salicaria*, *Potentilla fruticosa*, columbines and larkspurs.

Other bloom appeared late in the season. Hydrangeas, lilies and dahlias were particularly prominent, although they were seriously injured by the severe drouth.

Roses.—No other floral display of the Horticultural Department awakened such interest as the roses. The last days of June and the first days of July saw all the rose plantations in excellent bloom. The chief interest centered about the rose garden in the southeastern portion of the island (plot 20, map on page 105), for not only were the displays good, considering the conditions, but there was something of unusual suggestiveness in a garden given over bodily to a wealth of roses. This rose garden comprised a little less than an acre of land in rectangular shape and surrounded by a chain fence. It was laid out in severe geometric fashion and comprised forty beds, four of which were filled with clematis. In design this garden reminded one of a gigantic hot-air register. From an artistic point of view, some freer and more natural arrangement of groups or clumps upon the sward would have been better; but it must be considered that the plants were received so irregularly that little definite planning for effects could have been confidently made, and many of the plants were so small that they would have given little character to any bold system of grouping.

In considering the ornamental plantations, one must remember that the soil was but a shallow covering of black earth, and that it was loose and droughty; and in the rose garden there was no soil which is adapted to roses. The gardeners also complain that the intense sun of the American climate burns out the more delicate and better roses as soon as they open. Yet, notwithstanding all this, it was generally conceded that the rose garden was a success. A low trellis bounded the garden just inside the fence, and it was covered, most of its length, with a profuse bloom of Pride of Washington rose, furnished by Dingee & Conard Co. A short portion of the trellis was planted to Baltimore Belle, but this variety failed to make a satisfactory show. Each of the interior beds contained but a single exhibit, although various exhibitors occupied more than a single plot. Those beds or plots bordering the margin of the garden were often more or less mixed.

The records of the rose garden were not complete, and it is impossible to make an exact statement of the exhibitors and varieties, although the following list of exhibitors is practically complete:

Planted in 1892. E. Asmus, West Hoboken, New Jersey, two varieties, hybrids.
1892. Robert Craig, Philadelphia, two varieties. (State of Pennsylvania).
1892. Alexander Dickson & Sons, Newtownards, Ireland, 20 varieties.
1893. Alexander Dickson & Sons, Newtownards, Ireland, three varieties.
1892. California exhibitors, 35 varieties, hybrids.
1893. California exhibitors, 24 varieties, hybrids.
1893. California exhibitors, 67 varieties, Teas.
(California State Exhibit, and California Nursery Co.)
1893. Dingee & Conard Co., West Grove, Pennsylvania, three varieties.
1892. Boskoop Nursery Association, 144 varieties, hybrids. A few of these died.
1892. M. Jeurgisson, Boskoop, Holland, 60 varieties.
1893. E. G. Hill & Co., Richmond, Indiana, 20 varieties, Teas and Polyanthas.
1892. Nanz & Neuner, Louisville, Kentucky, 15 varieties, hybrids.
1893. Nanz & Neuner, Louisville, Kentucky, 17 varieties, Teas.
1893. John N. May, New Jersey, four varieties, Teas.
1892. Ohio exhibitors, 10 varieties. (Dayton Star Nurseries).
1893. Pitcher & Manda, New Jersey, 30 varieties, hybrids.
1893. E. Seyderhelm, Buda Pesth, Austria, about 200 varieties, standards.
1892. J. C. Vaughan, Chicago, one variety.
1893. German exhibitors, about 500 varieties, hybrids, Teas and standards.

Aside from these exhibits, there were on the island about sixty varieties of standards from W. Van Kleeff & Sons, Boskoop, Holland; a large lot of standards from the German Department* (included in the above estimate of 500 varieties); a lot of Marshall P. Wilder, very fine, from Ellwanger & Barry, and an attractive little bed of Dawson and *Rosa Wichuriana* by W. C. Strong, of Massachusetts. About the Woman's Building, among the French plants, were collections of roses: (1) By L. Paillet, Vallée de Châtenay, near Paris, about 100 varieties, all standards; (2) by G. Boucher, Paris, about 200 varieties of standards and many low plants; (3) by Levavaseur & Son, Ussy, France, of *Rosa rugosa*. There was also a collection of imported standards shown in the New York exhibit in the rear of the Horticultural Building by Gabriel Marc & Co., Woodside, Long Island. Finally, about the California State Building, there were several tree roses, six to eight feet high, which attracted considerable attention.

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*German firms and individuals represented were Lambert & Reiter, Trier; O. Tiefenthal, Hamburg; Joseph Mock, Trier; Carl Goerns, Potsdam.

In all this abundance of roses it is impossible to single out any one exhibit as better than all others. Yet, so far as novelty and striking merit of varieties are concerned, the exhibit of Dickson & Sons, Ireland, probably excelled. This firm originates varieties, and it needs no introduction to American rosarians. Among the striking roses in this exhibit were, Mrs. John Laing, Margaret Dickson, Earl of Dufferin, Jeannie Dickson, Marchioness of Dufferin, Blanche Moreau and Céline, the last two being moss roses.

The German exhibit was the largest. It was made up of about ten different lots, from several German growers. The California roses were very strong and free blooming, and were among the best show plants in the garden. American Beauty and Mignonette were particularly good in this collection. Other prominent varieties were Clothilde Soupert, shown by Vaughan, and Ulrich Brünner, shown by Craig. The latter is only semi-double, and the bud is very attractive.

With the exception of the plants of Nanz & Neuner and the Clothilde Soupert, by Vaughan, all the hardy roses were budded. This fact proves that nearly all dealers prefer such stock for strong growth and quick results; and if the plants are set deep enough, so that the bud is three inches below the surface, it is commonly agreed that budded plants are superior to others for outdoor planting. The standard roses were a surprise to many Americans. The rose is budded four or five feet high upon a straight, slender stock, which is stripped entirely of its leaves after the bud begins to grow. In the specimens on exhibition the bud was two seasons old, forming a compact little bush or bunch on the apparently dry cane. These plants were set in rows or other formal fashion, and most of them were tied to green stakes. These tree or standard roses are much used in Europe for planting in the centers of foliage beds, or for use as supports to various climbing herbs.

3e. The Nursery Exhibits.—The nursery exhibits of the Columbian Exposition were much scattered. Some of them were placed upon the island, others, from French exhibitors, about the Woman's Building, one or two were in the rear of the Horticultural building, while the greater part of the evergreen stock and very nearly all the fruit stock was in the Midway Plaisance. Aside from the displays in the Midway, there were few which could be technically called nursery exhibits or which were so entered. The most important single collection shown as nursery stock was that of Ellwanger & Barry on the island (Plots 12, 14, 15, map page 105), which was devoted solely to ornamental plants. Specimen coniferous and other evergreens from Waterer (shown by Fred Kelsey) were shown at the south end of the island (plot 34), and there were broad-leaved evergreens entered for competition in the French quarters about the Woman's Building. But the only evergreens which were shown as nursery displays were those in the Midway.

The Nursery Exhibits in the Midway Plaisance.—Near the east end of the Midway Plaisance, two and a half acres, divided by the street, were devoted to nursery exhibits. It was originally intended to devote a larger area to this industry, but, owing to delay in preparing it and the disinclination of nurserymen to make displays so far removed from the main part of the Fair grounds, the plan was abandoned in the spring of 1893, and the present area was hastily put in order. The soil was sandy, and none of the stock was set until May, 1893, so that the exhibit was necessarily poor. The fruit tree nurserymen of America were wholly unrepresented. Once it was proposed to have American nurseries in actual operation, from the raising of the seedlings to the budding and grafting and the handling of marketable trees; but the time was too short for accomplishing so much, and the nurserymen were not inclined to respond quickly. As it was, the nursery grounds in the Plaisance were occupied chiefly by California with a citrous orchard and various specimen plants, by a mixed collection from Mexico, three exhibits of evergreens by Illinois and Wisconsin nurserymen, and displays by five French firms.

California filled about half the entire area. This display made little attempt to show nursery stocks or methods. The greater portion was an orchard of oranges, lemons and other citrous fruits, and was really a mate to the small orchard in the north court of the Horticultural Building (K, plan page 105). Many of these trees were in bearing. Many interesting single specimens of various plants were comprised in the collection. Among the best was a tree of *Grevillea robusta,* twenty feet high and six inches in diameter at the base, and some pepper trees (*Schinus mollis*), both of which are popular street trees in Southern California. The loquat was also conspicuous, and the sides of the orchard were interspersed with roses, lantanas and polygalas, and interesting specimens of *Aralia papyrifera*, *Phœnix dactylifera* and *P. Canariensis*, *Chamærops excelsa* and the umbrella tree (*Melia Azedarach*).

A conspicuous feature of the Midway exhibits was the display of Mexico, contributed by Gustave Schiebe, of the City of Mexico. This collection arrived very late, and the continued drought shortened its growth. Yet the plants were so novel to northern eyes that the plot had unusual interest. A mere list of some of the more conspicuous plants will show the character of the exhibit and indicate the kind of plants which the Mexicans grow in the open: Coffee, sarsaparilla (smilax), musas, begonias, ficuses, *Macrozamia Mexicana*, *Clerodendron* (*Volkameria*) *fragrans*, cacti, *Rivina humilis*, *Dioon edule*, anthuriums, *Sanchezia nobilis*, *Citrus myrtifolia*, *Cestrum coccineum*, *Ardisia Mexicana*, *Datura arborea*, *Senecio elegans*, *Poinsettia pulcherrima*, *Pachira fastuosa*, guava in fruit, *Hibiscus Chinensis*, *Jambosa* (or *Eugenia*) *vulgaris*, cinchona, *Bescharneria yuccoides*, logwood (*Hæmatoxylon Campechianum*), *Cibotium* (or *Dicksonia*) *Schiedei* and *C. nigrum*.

At the end of the Mexican section, Martin Klein & Co., of Detroit, showed a few bushes of the "Dwarf Cherry," a plant which the vender supposed to have come originally from Japan, but which was the common wild *Prunus pumila* of the Northern States. This little cherry has merit as a fruit plant, but it seemed to be urged for some supposed medicinal value, founded largely upon the vivid red color of the roots, rather than for its fruit. It is said that the bush has been planted rather largely, one person in Michigan having 45,000 plants set in a regular plantation. *Prunus pumila* should not be planted indiscriminately, because it is a variable plant and many of the forms are utterly worthless for fruit. As soon as named varieties appear, we may expect confidence on the part of nurserymen and growers.

A cranberry bog in full operation attracted much attention. It was shown by A. C. Bennett & Son, Appleton, Wisconsin. A raised border, a foot and a half high, surrounded the little bog, and a small reservoir for water stood at one side. The water was conducted from this water-head through a gate, when it ran through the ditches which surrounded the four beds of cranberries. These beds were each about ten feet square, and were bearing fairly well. This was the only important display of the great cranberry interests of America which was made at the Exposition, although some of the fruit was shown on tables in the Horticultural Building.

The chief attraction in nursery displays, however, was in the French section, where displays of fruit trees and a very few ornamentals were shown by Pinguet-Guindon, of Tours; Ausseur-Sertier, of Liensaint; L. Paillet, of Vallée de Châtenay, near Paris; Honoré Defresne et Fils, of Vitry, and Croux et Fils, of Sceaux. Most of the fruit stock in these displays was trained in various fashions to fit it for growing upon walls or espaliers, or as globe-headed tall trees to stand in the center areas of small gardens. The method of training apples, pears and other fruit trees on wires, much after the manner of training grapes, is rarely seen in America, but in the confined areas of European countries it is common. The fruits which are obtained from these little trees are large and excellent, and usually sell for fancy prices. An apple tree which is trained to a one-arm cordon, the arm being eight or ten feet long, may be expected to mature from six to a dozen fruits. Of the better varieties, these fruits sell for one to three francs apiece in midwinter. This is especially true of Colville Blanc, which is one of the best varieties and a long keeper. It is interesting to note how different the varieties of these French trees were from our own fruits. Among apples one noticed the varieties of high quality and difficult culture. There were Colville Blanc, Colville Rouge, Pigeon de Rouen, Reinette de Caux, Reinette du Canada, Reinette de Granville, Reinette Franche, Reine des Reinettes and Pomme d'Apis (Lady Apple). Among peaches were Bon Ouvrier, Madeleine de Courson, Alexis Lepère, Madeleine Rouge, Précoce de Hale (Hale's Early), Brugnon Violet. Of pears, prominent kinds were Passe Crassane, Beurré Hardy, Président d'Estaintos, Beurré d'Hardenpont, Beurré Superfin and Doyenné Blanc. Plums, apricots, cherries, grapes upon American roots, and stocks of the St. Lucie (Mahaleb) cherry were also conspicuous. It must have been a matter of chagrin to Americans to know that the only important exhibits of fruit-tree stocks were from France; and that there were no exhibits whatever from any source of small fruit plants. And yet America is preëminently a fruit growing country!

The evergreen exhibits of the Midway were but three in number—by D. Hill, Dundee, Illinois; E. H. Ricker Co., Elgin, Illinois; George Pinney, Evergreen, Wisconsin. The largest collection of varieties was made by Pinney, who showed 189 species and varieties. The displays of the other firms were devoted rather more to the showing of large lots of well-grown small nursery trees of comparatively few varieties. All the exhibits were attractive and well made.

Various minor displays were made in this nursery section, only one of which need be mentioned here—the fence-row exhibit of the *Prairie Farmer*. This comprised a rail or "worm" fence a couple rods or less long, in the corners of which all the common weeds—which had been planted in—were allowed to grow. Beside it was a model fence area, with a wire fence and a sodded border; and a third strip alongside the unkempt fence-row, showed plants of the common farm weeds plainly labeled.

4. INCIDENTAL OR INDEPENDENT HORTICULTURAL FEATURES OF THE EXPOSITION.

Aside from the formal horticultural displays of the Fair, there were several incidental features of interest, particularly those about some of the State and Government Buildings; and there were a few regularly installed exhibits, of which the Japanese garden and the German Wine Building are the chief examples, which were so unlike all others as to call for special discussion.* Amongst the best landscape effects of the Exposition were the short north and south views from the bridge just inside the 57th street entrance, at the northwest corner of the grounds. This portion of the park was already improved before the location of the Fair, and the plantations of willows and lower foliage had assumed the freedom of established plants. There was nothing better in its way than the lagoon entrance to the Esquimo settlement, with its bowers of verdure. To the south, the view was more extended, terminating in masses of foliage, and it happened that the architecture of the Washington and California Buildings, which were backed up against this small lagoon, composed well with the planting. The older portions of the park lying to the east of this small pond or lagoon had fewer decorative features of merit; and the border of the main lagoon adjacent to the Fine Arts and Illinois Buildings were almost devoid of effective planting.

The seed exhibits were divided between the Horticultural and Agricultural Buildings; and the same was true of tools and implements. It was a serious fault of the Horticultural Department that no distinct effort was made at showing the practice and evolution of the spraying of plants, and the various implements concerned in it. The few spraying devices which were shown in the Horticultural Building, were scattered in two or three places; and some of these machines were shown in the Agricultural Building and others in Machinery Hall.

Gardening About State and Government Buildings.—There were four pieces of ornamental gardening at the Fair which

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*The beautiful German Wine Building, however, contained little of specific horticultural interest, and need not be discussed here. The reader will find a description of it in *Garden and Forest*, vi, 329.

were unique. They were all connected with individual buildings—one with the State Building of Pennsylvania, another with that of New York, a third with that of Massachusetts, and a fourth with the Convent of La Rabida. These four garden-pieces were so unlike each other in effect that they cannot be compared. They were all singularly well adapted to the general effect of the buildings which they supported. The Pennsylvania Building was characterized by a freedom and hospitality of style which seemed to demand a warmth of cheer and welcome in the planting. This color was well supplied by a bank of glowing Madame Crozy cannas which stood against the high front of the sweeping porches. This planting was probably the best individual mass of color in the Fair. The most important and novel lawn piece about this building was a large bed of mixed crotons, from Mr. George Huster, of Girard College. Mr. Huster seems to have the credit of introducing these plants into color-beds. When the plants are short and stocky, not exceeding one to three feet in height, they are capable of very satisfactory use upon lawns. A few good individual specimens of palms and hibiscus completed the features of this decoration. The planting was in the hands of Robert Craig of Philadelphia.

What the Pennsylvania Building gained by the profuse use of color, its neighbor, the New York Building, secured by stove plants and other rather formal specimens. The architecture was formal and pretentious, and any mere isolated color-masses upon the lawn would have appeared trivial in the comparison. The foliage effects were produced by temporary plants massed into the angles about the steps and wings. Some of the plants which were used with excellent effect in this manner, were *Ficus variegata*, araucarias, crotons, dracænas, box, *Salix rosmarinifolia*. The entrance itself was re-enforced by excellent large tub specimens of sweet bay (*Laurus nobilis*), and various palms; and upon either side, the antique fountains and mosaic were dressed with papyrus, aspidistras, eichornia and monstera. About the corridors and porches were many good specimens of palms, comprising *Areca Verschaffeltii*, *Seaforthia elegans*, *Phœnix rupicola* and *P. reclinata* and *Kentia Belmoreana*. The roof parapets were adorned with sweet bays in antique vases. Siebrecht & Wadley had charge of the embellishment of this building.

The most notable plant in flower during the first and second weeks in September stood upon the lawn of the New York Building. It was a magnificent specimen of *Furcræa gigantea*, better known as fourcroya, which stood in an immense vase on the sod. The flower stalk was over thirty feet high, and threw out a large, light, symmetrical panicle of drooping, creamy flowers. The bottom of the plant was as good as the top, the long, yellow-bordered leaves being numerous and perfect, and symmetrically disposed. The plant belonged to Siebrecht & Wadley, and was brought from their Trinidad nurseries.

Next to the New York Building was the charming, home-like building of Massachusetts, in the true colonial style, re-enforced with its terrace and esplanade. Here, again, was a distinct type of ornamentation. The terrace wall at the confines of the lot rose three or four feet high, and this was surmounted by a fence about four feet tall, and the whole was covered with a most profuse drapery of the interesting Japanese hop, sprinkled with the scarlet-runner bean and the morning glory. The esplanade inside this wall was some fifty feet wide, of which about ten feet at the outer side was covered with a free border of shrubbery. In this shrubbery were dogwoods and spireas in profusion, *Lycium Chinense*, *Solanum jasminoides*, lilacs, kerrias, symphoricarpuses, *Lonicera Morrowii*, with now and then a sprig of wormwood or *Daphne Cneorum.* Against the building was a mixed border of remarkable interest and beauty, which contained many of the familiar flowers, with masses of sunflowers against the windows. Among the plants which gave this border a home-like and native charm, were marigolds and asters, balsams, funkias, calendulas and alyssum, wild asters like *Aster Novæ-Angliæ* and *A. Tradescanti*, *Helenium autumnale* and hollyhocks. Excellent plants of the western *Helianthus orgyalis* grew against the front porch, and gave it much spirit. Upon the west side of the building a terrace about ten feet wide was brilliant with peonies, *Campanula Carpatica*, "The Pearl" achillea, *Pyrethrum uliginosum*, Golden Fleece chrysanthemum, bouncing bet, ragged robin, *Eupatorium ageratoides*, zinnias, *Coreopsis lanceolata*, eulalias, and the like. As a whole, this Massachusetts yard was the best single piece of decorative gardening at the Columbian Exposition, and the purity and simplicity of its bloom must have been a relief to every attentive visitor who had made a tour of the more pretentious efforts, with no end of "improved" varieties, in other parts of the grounds. The planting was designed by Woodward Manning, and its immediate care was in the hands of Louis Guerineau, a gardener of long experience.

The ornamentation about the Convent—which was made by the landscape department of the Fair—was designed to represent the sodless vegetation of a hot and arid region. It abounded in succulents like sedums, portulacas, mesenbryanthemums, house leeks and various stiff desert-like plants.

Among the more familiar plants one noticed an abundance of *Salvia splendens*, *Bocconia cordata*, single dahlias, cinerarias, petunias, ageratum, œnotheras, artemisia and various big solanums. The variety of vegetation, the superabundance of odd forms, and the masses of burning color, all enforced the sunny feeling of the place. The pretty court inside the building had a center of phœnixes, with bananas in the corners, and intermediate plantings of dark-leaved cannas, cobœas and caladiums, and window pots and boxes of red geraniums, English ivy and lantanas. The Convent itself was prominent from its peculiar architecture and its position upon an eminence jutting into Lake Michigan; but this glow of ground color sharply enforced its peculiarities.

Other buildings had conspicuous ornamental features. The great California Building was surrounded by a variety of interesting sub-tropical plants, but they were scattered about the lawn with the evident purpose of showing them off, rather than to make any garden design to support the building. This nursery included many good specimens of *Washingtonia filifera*, *Phœnix Canariensis*, *Chamærops excelsa*, and *C. Nepaulensis* and various interesting plants like *Romneya Coulteri*, wiegandia, *Leucodendron argenteum*, loquat, *Erythea edulis* and tree roses. The great date palm, grown from seed planted about 1770 by Father Junipera Serra, in the Mission Valley of San Diego, stood inside the building, rising to a height of fifty feet, and a specimen with larger trunk and nearly as tall, from Santa Barbara, stood on the lawn.

The Louisiana Building, which represented a plantation house, had various good plants in the yard, but they stood as individual specimens only. Here were roses, *Bambusa falcata*, caladiums, loquats, palms, camphor tree, *Pittosporum Tobira* and a bush of *Euonymus Japonicus* six feet high. The gray moss, or tillandsia, hanging from the catalpa trees in front of the house, gave a southern feeling to the place. The Missouri Building was conspicuous during the whole summer and fall for its excellent bank of *Solanum warsewiczioides* which masked the foundations. The French Building, upon the lake front, had some striking effects, especially in gaudy edgings of cineraria, alternanthera and lobelia. Various variegated or otherwise interesting specimen shrubs were conspicuous, particularly ilexes and euonymuses. Rhododendrons and altheas were also used, and there were a lot of good phœnixes from Martichon, of Cannes. But the ornamentation about the French pavilion, as about the California Building, had a much too scattered character to answer any purposes of landscape effect.

Japanese Horticulture at the Fair.—Amongst the formally entered exhibits of the Fair, none were more prominent than those of Japan, and they deserve special mention with the independent gardening features of the Exposition. Japan made four general horticultural exhibits—a garden upon the island, a garden in the north wing of the Horticultural Building (plot 3, diagram page 71), a collection of models, drawings and pots in the dome gallery of the same building, and a display of wines in the south or viticultural pavilion. The garden upon the island lay beside the Japanese Building (1, map page 105). It was divided into two parts, one representing the garden proper, and the other showing a collection of nursery stock. To one who had read much of Japanese gardening and who expected to see a characteristic miniature landscape with grotesque trees, this creation was a disappointment. The garden was simply a succession of low, smooth, grass-covered mounds with a few narrow walks winding about, and a hapless dearth of anything Japanesque in its planting. There were two obconical pine trees about four feet high, and perhaps twenty-five years old, but beyond these there was nothing striking among the plants, although there were good small specimens of *Sciadopitys verticillata*, *Cryptomeria Japonica*, and very small varieties of *Azalea Indica.* This so-called Japanese garden was planned by a builder who was concerned in the construction of the temple, and the Japanese gardener, Izawa, freely declared that it in no sense represented Japanese garden art. The nursery portion of the Japanese island display (plots, 2, 3, 4) suffered from too much land. There seemed to be land to spare upon this end of the island, and it was turned over to the Japanese, who had asked for less, and had also brought plants for a smaller area. Nevertheless, the exhibit had intrinsic merit, especially in showing some forty varieties of the Japanese maple, *Acer palmatum*, twenty-five of tree peonies, and about 150 varieties of *Iris Kæmpferi. Sterculia platanifolia*, rarely seen as a temporary lawn tree in the North, was also conspicuous. Two maples, which were less than head-high and about fifteen years old, were grafted with some twenty-five varieties each, and they presented a most unique combination of color in May and June.

The garden in the Horticultural Building, however, was a good example of Japanese art. While it was only twenty-two by 140 feet in extent and aimed to present landscape features, it contained no less than 2,000 distinct plants. It represented such a garden as may be adjacent to a dwelling house. A walk ran through the middle of the area lengthwise, crossing an arched bridge and pond near its middle. Upon either side of this central walk were miscellaneous collections of plants, so thickly planted as to nearly hide the earth. There was no attempt at greensward; and if the ground showed at all, it was covered with a rough porous rock (Ohio tuffstein) which soon assumed a greenish and mossy tint. The spaces between the higher plants were sometimes covered with low, grass-like plants and dwarf forms of *Azalea Indica.* The mossy rock bordered all the walks, and upon little mounds of it various dwarf and contorted trees were set, either in soil in the hollows, or in blue-lacquered pots. The water area extended fully one-third the length of the entire space. It originated in a square stone well near the northern extremity, the water being supplied from a pipe in the bottom. The water bubbled up in the center of the well, flowed over the side and ran in a broad stream near the outer edge of the garden for a distance of several feet, when it broadened into an irregular fish pond nearly twenty feet wide and as many feet long, dotted with picturesque islets and pots of fern, and spanned by the arched bridge already mentioned. This bridge was a unique feature. Its bed was made of two curved log sleepers with bark on, across which was laid a row of smaller logs, the cut ends presenting themselves to the observer. A dense layer of fagots or twigs was laid upon this corduroy to hold the soil, which was now placed on, being held at the edges by a margin of the mossy stone. The edges of this bridge were thickly planted, on the rear with blue-green sprays of *Juniperus littoralis* projecting over the water, and in front with large and small azaleas, ferns, and red-berried ardisias. Long fern-rhizomes, tied in withes with moss inside, were bent and twisted into grotesque figures, which were suspended here and there, and in the moist atmosphere these sent up tender fronds. Two immense stone lanterns of grotesque pattern comprised the architectural features of the garden.

A rustic box, about five feet long by three feet wide, standing upon a foundation of stones, showed a miniature landscape garden. There were hills and dales, three bridges, five houses, a dwarf *Thuya obtusa* and *Pinus densiflora*, each many years old, five miniature ardisia trees, and no less than twenty other plants in this little space, together with a large and irregular water basin. This was a plan or model of a Japanese garden. It was such a plan as the Japanese gardener expects to make before he proceeds to the improvement of grounds. It serves the purpose of a map.

There were many curious plants in the Japanese garden. The chief interest centered about two twisted trees of *Thuya obtusa*, which were three feet high, and a hundred years old.

Dwarfed and contorted pines and maples, the latter often bearing many varieties in the same top, were also conspicuous. Small young maple trees, of diverse forms, were used to good effect in certain bays and angles. Bamboos, irises, azaleas and variegated aucubas and elæagnuses gave color and spirit to the whole. This Japanese garden could not be called beautiful, as Americans understand rural art, but it was curious and grotesque, and it was an excellent object lesson in the art of patient and persevering garden-craft.

The wax or composition models of fruits and vegetables in the dome of the Horticultural Building were less perfect than many American casts, but they illustrated some peculiar types, especially the fingered oranges and the bamboo sprouts. These sprouts spring from bamboo crowns, and they are boiled and eaten after the manner of asparagus. The normal sprout is about three inches through at the base and a foot long, tapering gradually to the tip. The leaves are tightly imbricated, the short, green tips spreading slightly, much after the manner of a close-husked ear of corn. Egg plant fruits about half matured, cucumbers, watermelons, the russet apple-like Japanese pears, pomegranates, pomelos, vinifera grapes, apples—some of them showing the work of the codlin moth—and a variety of persimmons, completed the collection. These immature egg plant fruits are prepared by the Japanese by boiling, with sugar, when the flesh breaks down, forming a popular dish. There were also dried fig-like persimmons, dried mushrooms and chestnuts in the display. Gaudy artificial flowers, showing cherries, peonies and chrysanthemums, wall charts and drawings of flowers, and a unique collection of ornamental flower pots in terra cotta and in colors, filled out the tables of this curious exhibition.

The Japanese wine exhibit was small, and confined to a single variety of red wine. The display also showed preserved truffles in small tin cans.

PART II.

SPECIAL ANNALS.

§1. INTRODUCTIONS OF 1893.

A RECORD OF ALL THE VARIETIES OF ORNAMENTAL PLANTS, FRUITS, AND VEGETABLES INTRODUCED INTO PUBLIC SALES IN NORTH AMERICA DURING 1893.

The introductions for the present year are considerably less in number than for the two preceding years. The total number of novelties in 1891 was 884; in 1892, 716; and in the present year 649. From the list of this year, also, twenty varieties should be subtracted, as they were introduced in 1892 or 1891 (as specified in the list), but were missed in the census of those years (13 ornamentals, 15 fruits, 2 vegetables). The inventory of the present year is remarkable for the very large proportion of fruits and vegetables which it contains. The 649 entries are distributed as follows: 343 plants grown for ornament or curiosity; 153 fruits; and 153 vegetables. How many of these novelties may be old varieties reintroduced, it is no part of this census to ascertain; the present inventory aims only to enter the names which are new to American trade this year.

Acalypha Hamiltoniana. *John Saul, Washington.*
African Box Thorn, Lycium horridum. *Germain Fruit Co., Cal.*
Allamanda magnifica. *John Saul, Washington.*
— violacea. *John Saul, Washington.*
Alocasia Watsoniana. *John Saul, Washington.*
Amarantus superbus. *Thorburn, Henderson.*
Anemone, Double White Whirlwind. *Vick.*
Apple, American Blush. *Green's Nurs. Co., Rochester, N. Y.*
— Downing's Winter Maiden's

Blush. *Frank Ford & Son, Ravenna, O. E. M. Buechly, Greenville, O.* Originated with Jason Downing, New Madison, O.
— Herschal Cox. *J. O. Kelly & Sons, Jeff, Ala.*
— Walter Pease. *J. W. Adams & Co., Springfield, Mass.*
Argemone platyceras. *Colo. Nurs. Co., Loveland, Colo.*
Arisæma fimbriata. *John Saul, Washington.*
Asparagus, Mammoth Columbia. *Ferry.*
Aster, Alpine. *Vick.* From Mr. Ware, England.
— Giant White Comet. *C. E. Allen, Brattleboro, Vt.* (European).
— Empress. *Henderson.*
— Mary Simple. *C. E. Allen.* Known also as New Branching.
— Mignon. *Henderson.*
— New Carmine. *Dreer.*
— New White Branching. *Vick.*
— Parisian. *C. E. Allen.*
— Queen of the Earlies. *Henderson.*
— Zulu King. *Henderson.*
— 10 *varieties.*
Astilbe Chinensis. *Rea Bros., Norwood, Mass.*
Azalea occidentalis. *Cox Seed & Plant Co., San Francisco.*
Bean, Early Black Lima (distr. for trial in 1892). *Burpee.*
— Hemisphere. *Sam'l Wilson, Mechanicsville, Pa.*
— Irvine's Hybrid Perennial. *Cal. Experiment Sta.*
— King Pole. *C. E. Cole, Buckner, Mo.*
— Mammoth Bush Oyster. *C. E. Cole, Mo.*
— New Olathe Prolific. *Northrup, Braslan & Goodwin Co., Minneapolis.*
— New Prolific Pickling. *Vick.*
— Northern Prolific. *Kendall & Whitney, Portland, Me.*
— Wood's Earliest Hardiest. *T. W. Wood & Sons, Richmond, Va.*
Beet, Boston Market. *W. W. Rawson & Co., Boston.*
— Buckbee's Sunset. *H. W. Buckbee, Rockford, Ill.*
— Erfurt Model Mangel Wurzel. *Dealers* (F. Roemer, Quedlinburg, Germany).
— Erfurt Prize. *L. L. May & Co.* (1892).
— Detroit Dark Red Turnip. *Ferry.*
— Huntington's Extra Early Erfurt. *Huntington.*
Begonia, Abundance. (B. semperflorens × B. fuchsioides). *Hill.*
— Alba Picta Rosea. *Storrs & Harrison Co.*
— Columbia. *Storrs & Harrison Co.*
— Corbeille de Feu. *Hill.*
— Egene Vallerland. *Vick.*
— Improved Mont Blanc. *Breck.* (German).
— Polyantha. *Hill.*
— Siberiana. *Hill.*
— Thurstonii. (B. metallica × B. sanguinea). *C. Thurston, Paterson, N. J.* (1892?)
Blackberry, Autumn King. *Luther Burbank, Santa Rosa, Cal.*
— Colossal. *Salzer.*
— Maxwell. *A. C. Maxwell, Chanute, Kans.* Probably sold to some extent before 1893.
— Ohmer. *Albaugh Nursery Co., Tadmor, O.* First brought to notice by N. Ohmer, Dayton, O., who found it in a garden. First offered in 1892, but few plants were sold until 1893.
— Primus. *Burbank, Cal.*
— Sanford. *G. W. Graham, Afton, N. Y.*
Brodiæa filifolia. *Orcutt Seed & Pl. Co., San Diego, Cal.*
— Hendersoni. *Orcutt Seed & Pl. Co.*
Cabbage,
— Early Surprise. *L. L. May & Co.*
— German Export. *Johnson & Stokes.*
— Heidelberg Giant Flat Dutch. *Huntington.*
— Midsummer. *L. L. May & Co.*
— Minnesota's Earliest. *L. L. May & Co.*
— One Hundred Weight. *Northrup, Braslan & Goodwin Co.*
— Palace. *Faust, Phila.*
— Quincy Market Savoy. *M. B. Faxon & Co.*
— Red Winningstadt. *Henderson.*
— Safe Crop (distr. for trial in 1892 as No. 28). *Burpee.*
— Variegated Leaved Heading. *C. E. Allen, Brattleboro, Vt.*
— Washington Wakefield. *Northrup, Braslan & Goodwin Co.*
— 12 *varieties.*
Calendula, Sulphurea or Double Sulphur. *Dealers.* (Haage & Schmidt).
Calla, Albo-maculata, Dwarf Variegated. *Luther Burbank, Santa Rosa, Cal.*
— Snowflake. *Burbank.*

— Variegated Little Gem. *Burbank.*
Calochortus splendens var. atroviolacea. *Orcutt Seed & Pl. Co., San Diego, Cal.*
Calochortus Tolmiei. *Orcutt Seed & Pl. Co.*
Calophyllum inophyllum. *Reasoner Bros., Fla.*
Canna (Probably all from Crozy).
— Admiral Gervais. *Dealers.*
— Baronne Sandrans. *Hill.*
— Charles Henderson. *Dealers.*
— Chicago. *Vaughan.*
— Comtesse Olivier de L'Estoile. *Dealers.*
— Denil de St. Grevy. *Dreer.*
— Dr. Vergeley. *Hill.*
— Egandale. *Dealers.*
— Explorateur Crampbel. *Dealers.*
— J. D. Cabos. *Dealers.*
— J. Wilkinson Elliott. *Vaughan.*
— Marquise Arthur de L'Aigle. *Dealers.*
— Maurice Musy. *Dealers.*
— M. Mesnier. *Vaughan.*
— Nardy Pere. *Dealers.*
— Octave Mirabeau. *Vaughan* (Crozy).
— Paul Bruant. *Dealers.*
— P. J. Berckmans. *Vaughan* (Crozy).
— Professor Gerard. *Dealers.*
— Secretary Stewart. *Dealers.*
— Senior Montefiore. *Pierson.*
— Stadtgartner Gustav Sennholz. *Dealers.*
— 22 *varieties.*
Carex Fraseri. *Harlan P. Kelsey, N. C.*
Carnation, Bertha Stahl. *Edwards.*
— Blanche. *Dorner.*
— Crimson Coronet. *Geo. E. Creighton, New Hamburg, N. Y.* (1892.)
— Dr. Smart. *Dorner.*
— Edna Craig. *Robert Craig, Phila. E. G. Hill & Co.* Originated by Fred Dorner.
— Excelsior. *Brinton.*
— Florence Eddy. *Vick.*
— Florence Van Reyper. *Essex Heights Floral Co.*
— Gov. Russell. *M. M. Cummings.*
— Grace Battles. *Edwin Lonsdale, Phila. Pennock.* Originated by Lonsdale.
— Madam Albertini. *Dorner.*
— Mrs. Elizabeth Reynolds. *Dorner.*
— Mrs. Henry M. Stanley. *Shelmire.*
— Nancy Hanks. *M. A. Hunt, Terre Haute, Ind.* (1892.) Originated by Fred Dorner.
— New Columbian. *Childs.*
— New Jersey. *McGowan.*
— Old Rose. *McGowan.*
— Peachblow Coronet. *Geo. Creighton, New Hamburg, N. Y.* (1892).
— Purdue. *Dorner.*
— Richmond. *Dorner.*
— Ruth Churchill. *Essex Heights Floral Co.*
— Sentinel. *Hill.*
— Spartan. *Dorner.*
— Wabash. *Dorner.*
— Western Pride. *Dorner.*
— Wm. Scott. *Dorner.*
— 26 *varieties.*
Carrot, Earliest of All. *Salzer.*
— Victoria. *Northrup, Braslan & Goodwin Co.*
Cauliflower, Faxon's Early Boston. *M. B. Faxon & Co.*
— White Solid. *L. L. May & Co.*
Celery, Perle le Grand. *Johnson & Stokes.*
— Pink Aromatic. *Iowa Seed Co.*
Cherry, Bay State. *J. W. Adams & Co., Springfield, Mass.* Offered as two year buds in the fall of 1893.
— Dwarf Cherry (Prunus pumila). *Martin Klein & Co., Detroit,* as early, perhaps, as 1891 and 1892. Sold by them for a fruit plant, but previously offered by others for ornament.
— Mercer. *Jos. H. Black & Son, New Jersey.*
Chrysanthemum, A. A. Sturges. *Spaulding.*
— Ada Strickland. *Spaulding.*
— Alba Venus. *Smith.*
— Alice C. Brewster. *Vick.*
— Amber Queen. *Hill.*
— American Flag. *Spaulding.*
— Anna Woods. *Hill.*
— Armida. *Dorner.*
— A. T. Ewing. *Hill.*
— Autumn Glow. *Dorner.*
— Beauty Poitevine. *Bruant.*
— Brydon, Jr. *Spaulding.*
— Bynum, Schiltges. *Rieman.*
— Creole (Inc. Jap). *May.*
— Dr. H. D. Hull. *Smith.*
— Emily Ladenburg. *Dealers.* (Spaulding.)
— Enfante des deux Mondes. *Crozy.*
— Ermenilda. *Smith.*
— Ernst Rieman. *Rieman.*
— Falstaff. *May.*
— Fascination. *May.*
— Geo. R. Gause. *Hill.*
— Geo. S. Conover. *Vick.*
— Gettysburg. *Henderson.*
— Gloriana. *May.*
— Golden Wedding. *Henderson.* (Imported.)
— Good Gracious. *Henderson.*
— Henry F. Mitchell. *Standen.*

— H. L. Sunderbruch. *Walz.*
— Illuminator. *May.*
— Irma. *Rieman.*
— Jeannette. *May.*
— Jennie Williams. *Hill.*
— Joey Hill. *Hill.*
— Judge Hoitt. *Hill.*
— Madame Dupuy de Lome. *Standen.*
— Madame Edward Rey. *Calvat.*
— Madame Isaacs. *Hill.*
— Madame Octavie Mirbeau. *Hill.*
— Mad'lle Therese Rey. *Hill.*
— M. B. Spaulding. *Dealers.*
— Martha Duryea. *Spaulding.*
— Maud Dean. *Hill.*
— Miles A. Wheeler. *Smith.*
— Miss Frances Thorley. *May.*
— Miss Kate Brown. *Hill.*
— Miss Lydia Hopkins. *Hill.*
— Miss M. Simpkins. *Spaulding.*
— Miss Sue Price. *May.*
— Mr. Jingle. *May.*
— Mrs. Bayard Cutting. *Pitcher & Manda.*
— Mrs. B. F. Cole. *Standen.*
— Mrs. C. Harmon Payne. *Calvat.*
— Mrs. Chas. Duhme. *Dorner.*
— Mrs. Craige Lippincott. *Hugh Graham.*
— Mrs. Dudley C. Hall. *Spauldimg.*
— Mrs. F. L. Ames. *Pitcher & Manda.*
— Mrs. Henry Graves. *Pitcher & Manda.*
— Mrs. H. Joyce. *Standen.*
— Mrs. Howard Roberts. *Standen.*
— Mrs. J. M. Schley. *Spaulding.*
— Mrs. J. W. Crouch. *Hill.*
— Mrs. Leslie D. Ward. *Pitcher & Manda.*
— Mrs. M. E. Simmons. *Standen.*
— Mrs. M. W. Redfield. *Smith.*
— Mrs. Wm. Trelease. *Pitcher & Manda.*
— Mons. R. Bahuant. *Hoste.*
— M. Rene St. Foix. *Hill.*
— Niveus. *Smith & Son.*
— Parthenia. *Smith.*
— Pres. Wm. R. Smith. *Hill.*
— Queen Isabella. *Standen.*
— Redondo. *Smith & Son.*
— Robt. McInnes. *Hill.*
— Sarah Hill. *Dorner.*
— Summit. *May.*
— Temptation. *May.*
— The Queen. *Walz.*
— Truth. *May.*
— Vesuvius. *Walz.*
— Walter Hunnewell. *Spaulding.*
— W. G. Newitt. *Hill.*
— W. N. Rudd. *Hill.*
— Wyndmoor. *Spaulding.*
— 84 *varieties.*
Cineraria, Grandiflora Kermesina. *Dealers.*
Clematis Stanleyana. *John Saul, Washington.*
Cockscomb, Triumph of the Exposition. *Dealers.* (Benary.)
— Queen of Dwarfs. *Dealers.*
Coffee Berry. *C. E. Cole, Buckner, Mo.*
Coleus, Admiration. *Hill.*
— Beauty Francaise. *Hill.*
— Brightness. *Hill.*
— Clouded Gem. *Hill.*
— Etruria. *Hill.*
— Louis Paillet. *Hill.*
— Marvellous. *Hill.*
— Mme. Jeanne Magneau. *Hill.*
— Octoroon. *Hill.*
— Oriental. *Hill.*
— Paragon. *Hill.*
— Petit Robert. *Hill.*
— Velveteen. *Hill.*
— Ville de Dijon. *Hill.*
— Yellow Queen. *Hill.*
— 15 *varieties.*
Corn, Sweet, Allen's Golden. *Kendall & Whitney.*
— Alneer's Extra Early Columbia. *Alneer.*
— Aroostook Early. *Aroostook Valley Seed Co.*
— Extra Early Columbia. *C. E. Allen, Brattleboro, Vt.*
— First Crop. *Farquhar, Boston.* (1892?)
— Sweet, Golden Dawn. *L. L. May & Co.*
— Huntington. *Huntington.*
— Nonesuch. *Maule.* (C. S. Clark, Wakeman, O.)
— Quincy Market. *Gregory.*
— Silver Coin. *Livingston.*
— 10 *varieties.*
Crab, Bechtel's Double Flowering. *Stanton Nurs., Stanton, Ill.* (1892.)
Cucumber, Cool and Crisp. *Henderson.*
— Giant Green. *Northrup, Braslan & Goodwin Co.*
— White Wonder. *Burpee.*
Currant, Knight's Improved. *Albertson & Hobbs, Bridgeport, Ind.*
— Red Wine. *Salzer.*
— Russian. *C. E. Cole, Buckner, Mo.*
Dahlia, Belle of Springfield. *Childs.* (C. L. Burr, Springfield, Mass.)
— Ethel Vick. *Vick.*
— The following ten varieties by *W. H. Tarbox, Crompton, R. I.*, imported from England, all except Mignon from Heynes, Williams & Co., Salisbury, Eng.
— Baron Schroeder.
— Comedian.

— Countess of Pembroke.
— Hynerith.
— Lancelot.
— Lilian.
— Mignon.
— Mrs. Arthur Newall.
— St. Catherine.
— Viscountess Folkstone.
— 12 *varieties.*
Dandelion, Improved Erect. *C. E. Allen, Brattleboro, Vt.*
— Large French Montmagny. *C. E. Allen.*
Datura, Cornucopia. *Pitcher & Manda.*
Dichorisandra Sieberti. *John Saul, Washington.*
Dipladenia Harrisii. *John Saul, Washington.*
Dracæna Sanderiana. *John Saul, Washington.*
Egg-Plant, Creole. *Northrup, Braslan & Goodwin Co.*
— New Jersey Improved Large Purple Smooth Stem. *Johnson & Stokes.*
Eritrichium nothofulvum. *Breck.* (From Hurst & Son, London.)
Erythronium Hartwegii. *Orcutt Seed & Pl. Co., San Diego, Cal.*
Eucalyptus maculata. *Reasoner Bros., Fla.*
Fuchsia, Trailing Queen. *Childs,* (1892?)
Gaillardia lutea. *Rea Bros., Norwood, Mass.*
— Perfection. *Bridgeman.*
Geranium, Admiral Gervais. *Dealers.*
— Banquise. *Dealers.*
— Beatrice Kelway. *Hill.*
— Beauty of Richmond. *Hill.*
— Benjamin Schrœder. *Hill.*
— Bill Nye. *Hill.*
— Comte d'Elbee. *Dealers.*
— Comte de Netumieres. *Hill.*
— Dr. Levavaseur. *Hill.*
— E. Legouve. *Hill.*
— Gettysburg. *Hill.*
— James Kelway. *Hill.*
— J. J. Harrison. *Hill.*
— Jno. Good. *Hill.*
— Lady Brooke. *Hill.*
— Lord Roseberry. *Hill.*
— L. Swartling. *Hill.*
— Marie Stuart. *Hill.*
— Mme. Ch. Dabouche. *Dealers.*
— M. Remy Martin. *Hill.*
— Mrs. Robert Cannell. *Hill.*
— Prof. Poirault. *Hill.*
— Silver Jewel. *Vick.*
— Spotted Beauty. *Hill.*
— Th. Lavallé. *Dealers.*
— Violet Queen. *Hill.*
— Wedding Ring. *Hill.*
— W. P. Simmons. *Dealers.*
— 28 *varieties.*
Geum Rossii. *Colo. Nurs. Co., Loveland, Colo.*
Gladiolus, Ben Hur. *Childs.*
— Columbia. *Childs.*
— Dr. Sellew. *Childs.*
— Henry Gillman. *Childs.*
— Mrs. Beecher. *Childs.*
— Wm. Falconer. *Childs.*
Gloxinia, Hetherset Hybrid. *Breck.*
Gonania Domingensis. *Reasoner Bros., Fla.*
Gooseberry, Chautauqua. *Lewis Roesch, Fredonia, N. Y.*
— Erfurt Giant. *Salzer.*
— Franklin Park. *Schlegel & Fottler, Boston.*
— Watson Seedling Tree. *Sam'l Wilson, Mechanicsville, Pa.* First seen in 1879 in a gooseberry plantation of William and Andrew Watson, Provo City, Utah.
Gourd, Anaconda. *Sam'l Wilson, Mechanicsville, Pa.*
Grape, Columbia. *Columbian Grape Co., Kingston, O.*
— Goldstine's Early. *L. T. Sanders, Plain Dealing, La.*
— Jumbo. *J. P. McKinley, Orient, O.*
— Sunbeam. *Salzer.*
— The following 43 varieties of Italian Wine Grapes, were offered, late in the season by the *California Experiment Station:*
— Antibo.
— Aspiran noir.
— Barberossa di Finallaorgo.
— Bergan, or Persan.
— Bermestia violacea.
— Bolgnino.
— Cattaratu a la porta.
— Cenanese nero.
— Chenin noir.
— Cipro nero.
— Colutam cucco bitondo.
— Corbeau.
— Crejidero.
— Croatina.
— Croetto.
— Croetto Moretto.
— Danugue.
— Erbalus di Caluso.
— Favorita.
— Gioreto.
— Grisa di Piemonte.
— Malvasia de la Cartuja.
— Malvasia di Brolio.
— Malvasia Rovasenda.
— Mammolo Toscano.
— Monica.
— Nebbiolo di Dronero.
— Negrara di Gattinara.
— Negro Amuro.
— Negro dolce.

— Neiretta.
— Neiretta de Colucellio.
— Ocra di Bove.
— Olivette de Cadenet.
— Paga debito.
— Pelarerga.
— Picpoule.
— Quagliano.
— Tadone.
— Torok goher.
— Trivioti.
— Vernaccia Sarda.
— Zinzillosa.
— The following 10 Persian varieties were offered late in 1893 by the *California Experiment Station:*
— Alhakahee.
— Askaree.
— Chavooshee.
— Dismar.
— Hutab.
— Khallillee.
— Paykaynee Razukee.
— Rish Raba.
— Shiraz.
— White Shahanee.
— 57 *varieties.*
Hibiscus Rosella. *Germain Fruit Co., Cal.*
— Sunset. *Vick.*
Hollyhock. Fay's Silver Medal Strain. *Schlegel & Fottler.* (1892.)
Homoceltis Japonica. *Reasoner Bros., Fla.*
Hop, Japanese variegated. *Dealers.* (F. Roemer, Quedlinburg, Germany, 1892 or 1893.) Evidently first catalogued in this country by Vick.
Impatiens Sultani, Queen Carola. *Dealers.*
Isonandra gutta. *Reasoner Bros.,Fla*
Larkspur, American Banner. *Iowa Seed Co.*
— Stock-flowered. *Bridgeman* (Benary).
Lathyrus violaceus. *Cox Seed & Plant Co., San Francisco.*
Leek, Dobbie's Champion. *Dreer.* (From Dobbie & Co., Rothesay, Scotland.)
Lettuce, Arlington Forcing. *C. E. Allen, Brattleboro, Vt.*
— Early Cream. *L. L. May & Co.*
— New Iceberg (sent out for trial). *Burpee.*
— Thick-Head Yellow. *Dealers.* (European.)
— Tompkins' Perfection. *Huntington.*
Lilium Uki-Uri. *H. H. Berger & Co., San Francisco.*
Lobelia Erinus Compacta Goldelse. *Dealers.*
Loganberry, *Cal. Experiment Sta.;* said to be a cross of red raspberry and a wild blackberry.
Lychnis Flos-Cuculi plenissima semperflorens. *Elizabeth Nurs. Co., Elizabeth, N. J.*
Lycium horridum. *Germain Fruit Co., Cal.*
Mayberry, Japanese Golden (Rubus palmatus). *Luther Burbank, Santa Rosa, Cal.*
Mignonette, Eloise Francis. *Dreer.* (European).
— Improved Victoria. *Dealers.*
Mole Plant (Euphorbia Lathyris). *Sam'l Wilson.*
Mulberry, Czar of Russia. *Salzer.*
Muskmelon, Big Ben. *Northrup, Braslan & Goodwin Co.*
— Extra Early Sweet Orange Blossom Cantaloupe. *C. E. Cole.*
— Green-fleshed Osage. *Johnson & Stokes.*
— Melrose. *Burpee.*
— Mexican Banana. *Salzer.*
— Perfected Delmonico. *Henderson.*
— Tip Top. *Livingston.*
Nicotunia (Nicotiana × Petunia). *Burbank.*
Onion, Columbia King. *Alneer Bros., Rockford, Ill.*
— Oregon Longkeeper. *Frank Ford & Son, Ravenna, O.*
— Sultan. *L. L. May & Co.*
— White Prize Winner (distr. in 1892 for trial). *Johnson & Stokes.*
Pandanus Baptistii. *John Saul, Washington.*
Pansy, Cardinal. *Dealers,* (European).
— Canary Bird. *Dealers,* (European).
— Fay's Prize. *Dealers.*
— Kaiser Frederick. *C. E. Allen.*
— Parisian. *C. E. Allen.*
Papaver alpinum roseum. *Dealers.*
— lævigatum. *Dealers.*
Paritium elatum. *Reasoner Bros., Fla.*
Paw Paw, Genuine Missouri. *C. E. Cole, Buckner, Mo.* The native paw paw has been long in cultivation, but this seems to be meant for a named variety of it.
Pea, Exonian. *Thorburn.*
— Huntington's New Mammoth. *Huntington.*
— Juno. *Henderson.*
— Reed's Early Prize. *Iowa Seed Co.*
— Royal Bengal Mammoth Prolific Wonder. *C. E. Cole, Buckner, Mo.*
— Sapphire. *Northrup, Braslan & Goodwin Co.*

— Wm. Hurst. *Ferry.*
— Wonderful. *T. W. Wood & Sons, Richmond, Va.*
— Wood's Mammoth Luscious Sugar. *T. W. Wood & Sons, Richmond, Va.*
— Sweet: See Sweet Pea.
Peach, Ameliaberta. *J. O. Kelly & Sons, Jeff, Ala.*
— Campbell Cling. *L. T. Sanders, Plain Dealing, La.*
— Colon (Taber's No. 29). *G. L. Taber, Glen St., Mary, Fla.*
— Ferdinand (Taber's No. 33). *G. L. Taber, Fla.*
— Longhurst. *Green's Nurs. Co., Rochester, N. Y.*
— McKinney's May. *L. T. Sanders, La.*
— Sangmel (Taber's No. 31). *G. L. Taber, Fla.*
— Stewart Cling. *L. T. Sanders, La.*
— Taber (Taber's No. 26). *G. L. Taber, Fla.*
— Triana (Taber's No. 34). *G. L. Taber, Fla.*
—Tyehurst, *E. Tyehurst, Leamington, Ont.*
— 11 *varieties.*
Pepper, Creole. *Dealers.*
— Elephant's Trunk. *Dealers* (Haage & Schmidt).
— Scarlet Trumpet. *Breck.*
Petunia, Grandiflora, Double Violet. *Dreer.*
— Sunset. *Bridgeman.*
Phlox, Drummondii lutea fl. pl. *Dealers.*
Pink, Essex Witch. *Thaddeus Hale, So. Byfield, Mass.*
Plum, Choptank. *J. W. Kerr.*
— Delaware. *Burbank.*
— Golden. *Burbank.*
— Juicy. *Burbank.*
— Purple-leaved Hybrid. *Burbank.*
— Shipper. *Burbank.*
— Sophie. *J. W. Kerr.*
— Stoddart. *Iowa Seed Co.*
— Tennant Prune. *McGill & McDonald, Salem, Or.* Originated by Rev. John Tennant, Ferndale, Wash.
— Wickson. *Luther Burbank, Santa Rosa, Cal.* First described as Perfection.
— 10 *varieties.*
Polygala paucifolia alba. *F. G. Pratt, Concord, Mass.* (1891?)
Poppy, American Flag. *Henderson.*
— Silver Lining. *Burbank.*
Potato, Aroostook Beauty. *Aroostook Valley Seed Co.*
— Child's North Pole. *Childs.*
— Columbian Peachblow. *Iowa Seed Co.*
— Columbus. *Frank Ford & Son, Ravenna, O.*
— Early Harvest. *Geo. W. P. Jerrard, Me.*
— Early Six Weeks. *Everitt.* (1892?)
— Early Beauty of Elberon. *Hawley.*
—Extra Early Panama. *C. E. Allen.*
— King of Roses. *Dreer.*
— Maggie Murphy. *Vick.*
— New Columbus. *E. M. Tracy, Ogdensburg, N. Y.*
— Northern Star Seedling. *E. M. Tracy*, N. Y.
— Oswegatchie. *E. M. Tracy, N. Y.*
— Reed's Early Pinkeye. *L. H. Reed, Grand Rapids, Wis.*
— Vigilant. *E. M. Tracy N. Y.*
— World's Fair. *J. C. Vaughan.*
— 16 *varieties.*
— Sweet: See Sweet Potato.
Pumpkin, Gibson. *Gregory.*
— Winter Luxury. *Johnson & Stokes.*
Pyrethrum, Golden Button. *Bridgeman.*
Quince, Borgeat. *J. W. Adams & Co., Springfield, Mass.* Imported from France.
— Santa Rosa. *Burbank.*
— Van Deman. *Burbank.*
Radish, Barteldes Glass. *Barteldes.*
— Golden Dresden (distr. in 1892 for trial). *Burpee.*
— White Star. *L. L. May & Co.*
Ranunculus cortusiæfolius. *John Saul, Washington.*
Raspberry, All Summer. *Mrs. A. A. Stowe, Haily, Idaho.*
— Columbian. *J. T. Thompson, Oneida, N. Y.*
— Dictator. *Burbank.*
— Eureka. *Burbank.*
— Kenyon. *O. A. Kenyon, McGregor, Iowa.*
— Mills. *Chas. Mills, Fairmount, N. Y.*
— October Giant. *Burbank.*
— Paradox. *Burbank.*
— Sugar Hybrid. *Burbank.*
— Wonder. *Albertson & Hobbs, Bridgeport, Ind.*
— 10 *varieties.*
Ravenala Guianensis. *Reasoner Bros., Fla.*
Retinospora, Dawson's Golden. *J. W. Adams & Co., Springfield, Mass.*
Rose, American Belle. *John Burton, Phila.*
— Baronne G.de Noirmont. *Dealers.*
— Etoile Polaire. *Dealers.*
— Grand-Duc Adolphe de Luxembourg. *Dealers.*
— Grande-Duc Guillaume de

Luxembourg. *Dealers.*
— Grande-Duchesse Adelaide de Luxembourg. *Dealers.*
— Imperatrice Auguste Victoria. *Dealers.*
— La Fraicheur. *Dealers.*
— L'Etincelante. *Dealers.*
— Madame Joseph Bonnaire. *Dealers.*
— Mademoiselle Genevieve Gonjon. *Dealers.*
— Mademoiselle Jeanne Masson. *Dealers.*
— Peachblow. *Burbank.*
— 13 *varieties.*
Rosella, Hibiscus Rosella. *Germain Fruit Co., Cal.*
Saintpaulia ionantha. *John Saul, Washington.*
Salvia, Clara Bedman. *Dreer.*
— grandiflora. *Thorburn.*
— lyrata. *Wm. F. Bassett & Son, Hammonton, N. J.*
— splendens, compacta erecta. *Thorburn.*
— nana compacta, President. *Breck.*
— New Apple Blossom. *Thorburn.*
— New Cherry Red. *Thorburn.*
Scabiosa atropurpurea, Giant King of Blacks. *Dealers.*
— Golden Yellow. *Dealers.*
Scutellaria resinosa. *Colo. Nurs. Co., Loveland, Colo.*
Silene maritima plena. *Rea Bros., Norwood, Mass.*
Solanum Wendlandii. *John Saul, Washington.*
Squash, Begonia-leaved. *Burbank.*
— Columbian. *Faust.*
— Delicata. *Henderson.*
— Faxon. *M. B. Faxon Co., Saugus, Mass.*
— Livingston's Pie. *Livingston.*
— Long Island White Bush. *Henderson.*
— Mammoth Whale. *Dealers.*
— New Eureka. *Livingston.*
Stock, Triumph Ten Weeks, Brilliant Crimson. *Breck.*
— White Column. *Henderson.*
Strawberry, Aroma. *E. W. Bruse, Leavenworth, Kansas.*
— Australian Everbearing, *Sunset Seed and Plant Co., San Francisco.*
— Beauty. *J. H. Haynes, Delphi, Ind.* (1892.)
— Belle. *Cleveland Nurs. Co.* (M. T. Thompson, Lakewood, O., originator.)
— Bisel's No. 1. Catalogued by *C. H. Webster, Centralia, Ill.*
— Chair's Early. *Chair, Delaware,* 1892. *J. S. Collins & Son.*
— Cherokee. *Julius Schnadelbach, Grand Bay, Ala.*
— Childs. *J. L. Childs* (1892).
— Clark's Seedling. *A. A. Fuller, Woodburn, Oregon, and others.*
— Cyclone. *E. W. Cruse, Leavenworth, Kansas.*
—Earliest of All. *Salzer.*
—Epping. *Geo. Q. Dow, North Epping, N. H.*
— Henry Ward Beecher. *Lovett.* (Originated by H. H. Alley, N. J.)
— Ivanhoe. *Cleveland Nurs. Co.* (From Geo. W. Trowbridge, Criskom, O.)
— Jay Gould. *Green's Nurs. Co., Rochester, N. Y.*
— Jefferson. *Julius Schnadelbach, Ala.* Advertised, but really not sent out in 1893.
— Klickita. *Edw. W. Cone, Menomonie, Wis.*
— Lanah. *E. T. Hollister, St. Louis, Mo.*
— Late Mastodon. *Salzer*
— Leviathan. *H. G. Wolfgang, Leetonia, O* (1891).
— Marshall. *Marshall E. Ewell, Marshfield, Mass.*
— Mary. *Lovett.* (Originated by H. H. Alley, N. J.)
— No Name. *Cleveland Nurs. Co.*
— Ona. *F. M. Kilbourne, Lakeville, Minn.*
— Oscar. *F. M. Kilbourne, Lakeville, Minn.*
— Otsego. *C. W. Graham, Afton, N. Y.*
— Princess. *G. H. & J. H. Hale, So. Glastonbury, Conn.* (Stock purchased of the originator, J. C. Kramer, La Crescent, Minn., by the above firm in 1892. Widely sold in 1893.)
— Regina. *Julius Schnadelbach, Grand Bay, Ala.*
— Rio. *Cleveland Nurs. Co.*
— Shuckless. *Hoover & Gaines Co., Dayton, O.*
— Smalley No. 6. *Julius Schnadelbach, Ala.* (Originated by Geo. D. Smalley, Judsonia, Ark.)
— Smith's Seedling. *Coe & Converse, Ft. Atkinson, Wis., and others.*
— Splendid. *C. H. Sumner, Sterling, Ill.*
— Tennessee Prolific. *Cleveland Nurs. Co.*
— Timbrell. *E. W. Reid, Bridgeport, O.* (Originated by H. S. Timbrell, Unionville, N. Y.)
— William's Early. *Julius Schnadelbach, Ala.* Not distributed widely in 1893.
— 36 *varieties.*
Streptocarpus Wendlandi. *Dealers.*

Strobilanthes Dyerianus. *John Saul, Washington.*
Sweet Pea. Blushing Beauty. *Dealers* (Eckford).
— Duchess of York (Princess May). *Henderson.* (Laxton.)
— Duke of Clarance. *Dealers* (Eckford).
—Dorothy Tennant. *Dealers,* 1892 (Eckford).
— Emily Eckford. *Dealers* (Eckford).
— Emily Henderson. *Henderson.* (Originated with Mitchell, Port Hope, Canada.)
— Firefly. *Dealers* (Eckford).
— Gaiety. *Dealers* (Eckford).
— Her Majesty. *Dealers,* 1892 (Eckford).
— Ignea. *Dealers,* 1892 (Eckford).
— Lady Beaconsfield. *Dealers* (Eckford).
— Lady Penzance. *Dealers* (Eckford).
— Lemon Queen. *Dealers,* 1892 (Eckford).
— Lottie Eckford. The original of this ran out, and is reintroduced this year by dealers.
— Mrs. Eckford. *Dealers,* 1892 (Eckford).
— Ovid. *Dealers* (Eckford).
— Peach Blossom. *Dealers* (Eckford).
— Rising Sun. *Henderson* (Laxton).
— Royal Robe. *Dealers* (Eckford).
— Stanley. *Dealers* (Eckford).
— Venus. *Dealers* (Eckford).
— Waverly. *Dealers,* 1892 (Eckford).
— 22 *varieties.*
Sweet Potato. Chinese 30 Days. *Childs.*
— Nancy Hall. *A. I. Aldrich, Orlando, Fla.*
— Peruvian. *Julius Schnadelbach, Grand Bay, Ala.*
— Texarkana. *Sam'l Wilson.*
Tagetes patula nana grandiflora. *Dealers* (German).
Thermopsis montana. *Colo. Nurs. Co., Loveland, Colo.*
Tomato, Aristocrat. *Livingston.*
— Brinton's Best. *Johnson & Stokes.*
— Buckeye State. *Livingston.*
— California Peach. *L. L. May & Co.*
— Chenery's Early. *Schlegel & Fottler.*
— Columbia Beauty. *Alneer.*
— Comrade. *Aaron Low, Essex, Mass.*
— Earliest of All. *Salzer.*
— Everbearing. *Faust.*
— Everbearing Plum. *Breck.*
— Extra Early Tree. *L. L. May & Co.*
— Giant Tree. *Salzer.*
— Gold Ball. *Livingston.*
— Hubbard's Early. *Jerrard.*
— La Crosse Seedling. *Salzer.*
— Lemon Blush. *Thorburn.*
— Logan's Giant. *Everitt.*
— Long-Keeper. *Thorburn.*
— Mary's Favorite. *R. D. Hawley & Co., Hartford, Ct.*
— New Combination. *Burbank.*
— Rose Peach. *Livingston.*
— Salzer's First Prize. *Salzer.*
— Salzer's Morning Star. *Salzer.*
— Salzer's New Pot. *Salzer.*
— Semperfructifera. *Pitcher & Manda.*
— Storm King. *Buckbee.*
— Shenandoah. *L. L. May & Co.*
— Standard Tree. *L. L. May & Co.*
— Terra Cotta. *Thorburn.*
— Topound. *Huntington.*
— Trucker's Favorite. *Burpee* (Horne).
— World's Fair. *L. H. Reed, Grand Rapids, Wis.*
— 32 *varieties.*
Turnip, Half-Long Red-Top (distr. in 1892 for trial). *Burpee.*
— Hurst's Monarch Swede. *Northrup, Braslan & Goodwin Co.* (Hurst & Son, London).
— Scarlet Kashmyr. *Gardiner* (Hurst & Son, London).
Vaccinium Myrtillus. *Colo. Nurs. Co., Loveland, Colo.*
Verbascum pannosum. *Dealers* (Benary).
Walnut, Hybrid (Juglans Californica x J. regia). *Burbank.*
— Juglans nigra x J. Californica. *Burbank.*
Watermelon, Cole's Early. *Henderson* (Cole in '92).
— Extra Early Russian. *Dealers.*
— Missionary. *C. E. Cole, Buckner, Mo.*
Zinnia. Curled and Crested. *Henderson.*
— Double Striped Perfection. *Bridgeman* (Benary).

§2. PLANTS ON THE WORLD'S FAIR GROUNDS.

A CATALOGUE OF EXHIBITORS AND VARIETIES OF HARDY PLANTS AT THE COLUMBIAN EXPOSITION, 1893; TOGETHER WITH A CRITIQUE OF THE EXHIBITIONS, TECHNICALLY CONSIDERED, OF THE DEPARTMENT OF HORTICULTURE.—BY WARREN H. MANNING.

The following lists of all persons and firms making exhibits of hardy trees, shrubs and herbs at the World's Fair (except roses), and the lists of species and varieties which they showed, is designed to be complete. It is certain, however, that a considerable number of plants are omitted, but they were such as had no labels and of which there were no specific entries. The list of plants follows the trade names, and there is no attempt to discover synonyms. These lists, and the introductory remarks, are contributed almost bodily by Warren H. Manning (except the catalogue of azaleas and rhododendrons), who probably made the most careful study of this class of exhibits of any person connected with the Exposition.

"*Purpose.*—In examining such an exhibit as that recently held at Chicago, one is led to inquire as to its motive, as to the good that will come from it, and how the best results and greatest benefits can be secured. To bring together from every State of a great Nation, and from all parts of the world, the producers and the products of any profession or trade, to display the appliances and materials used, and the most improved methods of production, educates and stimulates many who could not otherwise gain a knowledge of the most recent progress in their occupations. Such knowledge adds to the producing capacity of the individual, increases the value of his product, and thus adds to the industrial and artistic progress of the nation. The mutually advantageous exchange of products and ideas between people and countries, brought about by such an exhibit, could not be secured so well in any other way. It is thus that a nation secures a return for its interest in an international exposition. It confers a benefit upon thousands of its citizens, and helps to stimulate the world's progress.

"Such an exhibition is an illustrated history of progress. Every exhibitor contributes a line, every industry a page, and every country a chapter. It is the duty of the management to so arrange these parts in their proper sequence, that the purpose of an exposition shall be plainly manifest. Exhibitors will not concern themselves as to the purpose of the exhibition as a whole. Their primary motive is to advertise their business, and in doing so to make a display that shall excel that of their competitors. Such competition, if properly managed, can be made to serve the main purpose of the exhibition.

"In individual and State exhibits at this Fair, especially among Americans, a comprehensive display fairly representing the products of the exhibitor was, in many cases, made secondary to a mere showy spectacle, designed to attract the attention of the multitude,—a good business policy, perhaps, in the attractions of the Midway, but not alone sufficient to develop a permanent business. It appeared that an exhibit, to be a good advertisement, must be of a character to attract the attention of a large number of people, amongst whom there would likely be some from whom the exhibitor could expect to induce trade, but for these something more than a mere spectacle must be provided, something that shall represent clearly the merits of the product of the exhibitor and convey the idea that it excels in some particular. This last purpose would appeal especially to the foreign visitors, a larger proportion of whom made the long journey to be instructed, rather than amused. In many exhibits, the two objects were combined in a most admirable way, the material of which the exhibits were composed being well adapted to make an attractive display; but too often an attempt was made to combine that which was, to a greater or less degree, suitable for such a purpose with that which was entirely unsuited.

"A spectacular exhibit that, in a dignified way, distinctly conveys a meaning, is of value. The great orange obelisk of California will be remembered by thousands who will not be able to recall a single individual or collective exhibit from that State. As an advertisement of the State, and one of its principal products, it was a success. The big load of logs from Michigan was another notable exhibit by a State of one of its most important products. In the Forestry Building there was an attempt to combine miscellaneous wood products of a State to produce a decorative effect. For this purpose a pyramid was made of curious knots, pieces of wood, wooden spoons, shoes, shovels, etc. The result, as a whole, was neither impressive, attractive nor ornamental, nor did it make a good exhibition of the items of which it was composed. In the same display, varnished cross-sections of logs representing the trees of the State, were used to construct a mantlepiece. At about the same cost a comprehensive display of the forest resources of the State could have been prepared on the following lines, as suggested by a gentleman who had studied the subject carefully: Of each native forest tree of the State there should be shown a section of the trunk cut to show the grain in three directions; a cross-section; a plank; veneers of normal and figured woods; diseased woods, with insects and fungi causing the same; peculiarities in growth; examples of wood injured by natural causes; fruits, twigs, buds, leaves, flowers, photographs of fine specimens, samples of small manufactured articles, commercial products; also models of lumber camps, charcoal pits, sugar plants and outfits of tools for each, forest statistics and a forest map of the State.

"A spectacular display may have a proper place among individual exhibits, but for the managers of a department to make this their chief purpose seems hardly advisable. Any exterior effects of this character should be left to the designers of the grounds and buildings, so that their general design shall not suffer by the introduction of incongruous elements. Abstracts from a published statement of the general outline of one of the departments may be properly given, as showing a tendency towards such spectacular effects. After referring briefly to the space available for displays, to an 'elaborate' classification and what was embraced in it, the following purposes, and others of a similar character, made up the greater part of the paper: 'The planting in front of the building will consist of bedding plants, in raised beds, to harmonize with the ornamental frieze along the front of the building. The beds will probably be illuminated with electric lights. These lamps will show the complete outlines of every bed, and be placed to bring out the most spectacular affects.' 'It is intended to construct a miniature mountain under its center [the dome], and upon the sides and top of this artificial rockwork to set the largest specimens of palms, giant cacti, etc. Among this mass of exquisite foliage will be represented, by the use of electric lights, the forms and tints, in colored glass, of flowers rarely seen. Over its sides will fall, in translucent sheets and ripples, the water for a beautiful cascade, while the interior will form a cave, from the sides of which will be reflected lights, in order to observe the effects and test the endurance of different species under such conditions.' 'Basins will be made for exhibiting rare aquatic plants. Incandescent lamps will be arranged under the water to show effects not heretofore attempted.'

"*Arrangement.*—However good an exhibition may be, there is always an opportunity to criticize it and to draw lessons for future enterprises of similar character. What the exhibit of hardy plants at the World's Columbian Exposition might have been is hardly worth speculating upon, for it is a thing of the past. For much that was of interest and value to Fair visitors and to horticulturists, all credit should certainly be given to those who were in charge.

"There were 58 exhibits of hardy plants, aside from roses, on the grounds; of these 9 were from France, 4 from Holland, 3 from England, 1 from Japan, 1 from Hungary, and 35 from the United States. The exhibits could properly be divided into two classes: One including exhibits, or those parts of exhibits that were made up of a few plants, of a large number of species and varieties, made chiefly for the purpose of displaying the exhibitor's resources, the other including a large number of plants of a limited number of kinds having a special value for decorative purposes, either on account of their showy flowers, abnormal foliage or peculiar habits.

"The ground immediately about the Woman's Building was given up exclusively to the French exhibit. A few exhibits were in the nursery at the east end of the Midway Plaisance, but the larger number were on the Wooded Island. In this place, which, in the original laying out of the site of the Exposition was not intended for such displays, they were crowded in masses on the edge of existing groups of trees, or they were closely planted in beds, the size and outlines of which were governed mostly by the size and shape of the available grass patch in or near the center of which they were placed.

"In the nursery on the Midway, and about the Woman's Building, a portion of the exhibits were in rows, a part in crowded beds, and a part standing as individuals. On the island and about the Woman's Building, and in a few cases in the nursery, it was evident that in general the primary motive in the mind of those who arranged the displays, was to secure a decorative effect. The use of such part of a display as was intended for this purpose was, of course, justifiable, but it almost wholly destroyed the value of the display of varieties, for they were so closely planted and so far from the walks, to which the public was closely confined, that even if they had been distinctly labeled the name could not have been distinguished, and the close examination of growth, bark, buds, foliage, flowers and fruit, which one who is interested in such matters would like to make, was not possible. For an exhibit made up partly of plants of inferior merit, such an arrangement is an advantageous one, for the defects can be easily concealed; but an exhibit made up wholly of good specimens appears at a great disadvantage. If that part of an exhibit which was intended chiefly for decorative purposes had been separated from the display of varieties, and these last had been placed in nursery rows (or the herbaceous perennials in narrow beds), each standing as an individual and having an equal chance for growth and development, and these rows near enough to paths to enable an observer to read labels and make a close examination, the collections would have been of much greater educational value, more likely to show their true worth and to have brought to the exhibitor an adequate return for the expense of making the display. In these respects, a few exhibits of fruit trees in the nursery, from France, were the best arranged.

"*Classification.*—The success of an exhibit, as a whole, depends largely upon the skill displayed in its classification and arrangement. Mere bigness means nothing. There may be an immense amount of material to represent the industries and arts, but it can be of little educational value if it is not arranged in an intelligible manner, so that 'he who runs may read.' Few visitors stop to hunt up a misplaced display, neither do they spend their time to unravel the meaning of one that is not well arranged, while one that is properly placed and well displayed will leave an impression upon even a casual observer's mind. So far as practicable it should be the purpose and effort of those in charge, to so guide the exhibitors in the make-up of their displays that they will not only serve their individual interests, but will also contribute to make the whole exhibition as complete as possible in every department.

"The classification adopted for the horticultural and agricultural departments of the World's Fair was not wholly satisfactory, and it was undoubtedly responsible for some misunderstanding and conflict of interests which have been assigned to other causes. Its arrangement permitted the entry of the same product in both departments. For example, Agriculture: 'Group 24, Class 28. Potatoes, sweet potatoes, yams, etc. Class 29. Sugar beets, mangel wurzel. Class 30. Carrots, turnips, beets, artichokes, etc.' Horticulture: 'Group 23, Class 173. Radicaceous and tuberous vegetables. Beets, turnips, carrots, potatoes, radishes, etc.'

"Similar repetition and conflict were also evident in the classes of closely allied groups in the same department. For example, the question was presented in the assignment of extensive nursery displays of woody ornamental plants, if they should be placed, as a whole, in any of the following classes of horticulture, or subdivided between them: Group 22. Floriculture. Classes, 147, roses; 150, rhododendrons, azaleas, etc.; 156, climbing plants; 161, ornamental leaf plants; 166, rare exotic plants; 168, plants grown for commercial purposes; 171, miscellaneous. Group 25. Arboriculture. Class 185. Ornamental trees and shrubs; methods of growing, transplanting, etc.

"There were errors of omission in the classification, as well as repetitions. Weeds were not mentioned. Insects and means of combating them were mentioned in one or two groups, but not in floriculture, cereals and forage plants. There was no place definitely provided, in any of the departments, for plans of landscape architecture, notwithstanding that so much of the artistic success of the grounds and building was due to this profession. There were garden and park designs in the Horticultural, Agricultural, Ethnological and Liberal Arts Buildings.

"The interests which contribute to either horticultural or agricultural displays are the forester, farmer, market gardener, fruit grower, live stock raiser, nurseryman, florist, seed grower, and the manufacturer of appliances, tools, materials and fertilizers required to produce and handle their products, and the various scientific interests represented by the experiment stations and the government departments. These interests would include the products of the soil, the diseases affecting them, the appliances used in producing, improving, marketing and preserving them. How far they should be extended to include the materials manufactured from these natural products may be an open question. At the World's Fair, wine was in Horticulture, whisky in Agriculture, cider in both, animal perfumes in Agriculture, essential oils from peppermint, etc., in Manufactures. Would not a consistent classification exclude manufactured articles entirely from horticulture and agriculture?

"At the World's Fair, forestry was a department of agriculture, and the products of the fruit grower, the florist, and part of those of the market gardener, were under horticulture. In the subdivisions of a classification, all well defined interests should be distinctly recognized as divisions or classes, and it should be possible for them to so classify or label the various exhibits, so that all the other interests could easily secure information that they required for their special pursuits. Such interests as forestry, entomology, botany, mycology and chemistry are certainly distinct enough to be thus recognized. The seed trade, for example, is as distinct as the nursery or florist business. The subdivisions of trades into specialties should also be recognized; there are nurserymen who grow only small fruits, and florists who grow only carnations, etc. It ought to be possible to provide, in a classification, without unnecessary and confusing repetitions or omissions, for everything that would be entered without the frequent addition of 'etc,' and the provision of a 'miscellaneous' class."

"*Labeling.*—Of the 35 displays of hardy plants made by American exhibitors, not more than four or five had labels that could be read from the walks. The French exhibits, as a whole, were more plainly labeled than those of any other country, and the label in general use served its purpose admirably. It was a white celluloid card two by three inches, with a brass eyeleted hole in the center of one of the longest edges, through which a wire was placed to attach it to a tree, or a brass-headed nail to tack it at the upper end of a slender green wooden rod. The size, shape and method of hanging the label, made it possible to write the name horizontally, in letters large enough to be plainly read at some distance. A zinc tag about one by two inches, of similar shape, was also used, but all zinc tags, owing to their color, are difficult to find, and are frequently illegible, owing to poor or carelessly applied ink. In only one exhibit was the ordinary serviceable strong pine stake label used. These were painted black, with white lettering, and served their purpose very well. Rectangular pieces of boards of various sizes, and usually about one-fourth longer horizontally than vertically, and nailed at the upper end of a square stake, were used in several exhibits to designate groups or classes, and served their purpose well. These labels were usually painted white and lettered black. There was also in use a similar label, with a printed paper tag stuck to its face and then varnished. It would have been good if the tag had been made to stick. An admirable label for a permanent exhibit, but rather too expensive for a temporary display, was a slightly convex iron plate of rectangular outline with corners rounded. This was screwed to the top of an iron rod at an angle that made it easy to read. The facing and lettering of this label were of enamel, and, of course, it was always legible and unaffected by weather. The objections noticed were that the enamel scaled off if the screws were drawn too tightly, or if the edge was struck a sharp blow with a hard object. The stake was round and was more easily twisted or tipped over on account of the heavy label than it would have been had the end been flattened or pronged.

"In addition to these labels mentioned, many other kinds were represented, and nearly all were objectionable in some respect. Among these was the ordinary wooden tree tag, with a light copper wire, which soon became brittle and broke off, or with a copper wire so stiff that the bark was cut or the twig broken in twisting the label into a readable position, or an iron wire which soon rusted off. Many labels were unpainted, with the names effaced by the weather, or they were painted with a poor chalky paint, from which the name soon disappeared entirely. This poor paint was used on most of the stake and pot labels in the displays of herbaceous plants. The stake labels in use were generally so light that they would rot out in a season or be broken off by careless workmen. The Japanese had light cedar stake labels, very neatly lettered with what appeared to be a permanent black ink. They would probably resist decay, but not the rough usage of the careless weeder. The pot labels were, of course, too small to remain in place long. Manilla paper or cardboard labels may be very convenient for temporary use, but they are soon destroyed by outdoor exposure. Japanned sheet iron labels, if they were bent sharply, soon lost parts of their coating, and the name became obscure, In an exhibit of mostly low growing plants, a painted and lettered rectangular sheet metal label about three by four inches square was used. It had a hole in the center of one of its longest edges, by means of which it was slipped on to the top of a straight iron rod; it was then held in place with a rubber band above and below the label, and hung at such an angle that it could be easily read. A modification of this label, with a square hole fitting on to a square rod, so bent at the top as to keep the label always at the right angle and to prevent it from slipping off, would make an excellent, cheap and permanent label for exhibits of low plants, and in a large size for larger plants.

"I have thus gone into details with reference to labels, because labeling is of little value, however correct the names, unless it is distinctly legible. As to errors in naming, there were very few exhibits of hardy plants that were free from them. More or less misnaming of horticultural named varieties was to be expected, for they are to be numbered by the hundreds, and many are very much alike. Some errors showed evidence of being the result of a careless misplacing of labels, but there was no excuse for labeling *Cornus paniculata* as *Cornus florida*, or *Halesia tetraptera* as *Hamamelis Virginica;* and one is disposed to consider a nurseryman very much behind the times who still uses *Pinus Abies* for *Picea excelsa*, Periclymenum and Caprifolium for nearly all Loniceras, and who calls all American oaks *Quercus Americana*. It is hardly to be expected that nurserymen can keep their catalogues up to the latest changes in nomenclature, but they certainly ought to drop a name that has not been recognized by standard textbooks for fifty years.

"How can the method of labeling and the nomenclature in a future international exhibit of plants be improved upon? In the case under consideration it appears to be an example of 'what is everybody's business is nobody's business,' and consequently if better results are to be expected it must be made the business of some one to attend to this matter. Many of the most successful horticultural societies, both at home and abroad, have either a committee on nomenclature or a professor of botany, and surely, in an international exhibit, the question of nomenclature is of sufficient importance to have the attention of an authority or committee who is competent to determine the labels which are best adapted for the various exhibits, to formulate rules for their use, to determine the best authorities to follow in the naming of the various classes of plants, to determine, perhaps, if it were advisable to recognize any variation from the latest authoritative naming to better serve the convenience of the makers of trade catalogues (some of which, for example, call all the various genera which have at times been classed as Abies by a general name), and to determine how far synonyms, authorities, vernacular names, habitats, etc., shall appear on the labels. The report of such an officer would certainly be one of the most valuable publications of an exposition."

Exhibitors of Hardy Plants.

Achilles, Geo., West Chester, Pa.
Bassett, Wm. F., Hammonton, N. J.
Bechtels Sons, E. A. Staunton, Ill.
Blaaow & Co., Boskook, Holland.
Bloomington Phœnix Nursery, Bloomington, Ill.
Boskoop-Holland Nursery Ass'n, Boskoop, Holland.
Boucher, G., 164 Avenue d. Statie, Paris, France.
Canada, Government Experimental Station, Ottawa.
Cannell & Sons, Swanley, Kent, England.
Croux & Sons, Sceaux, France.
Defresne et Fils Honoré Vitry (Seine) Paris, France.
Dingee Conard Co., West Grove, Pa.
Douglas & Son, R., Waukegan, Ill.
Elliott, B. A., Pittsburg, Pa.
Ellwanger & Barry, Rochester, N. Y.
Gaston, A. H., North Harvey, Ill.
Hill, D., Dundee, Ill.
Horticulture, Department of (Columbian Exposition).
Japanese Exhibit.
Jurissen & Son, Jack, Naarden, Holland.
Kelsey, Fred W., 145 Broadway, New York City.
Koch & Rohlfs, Gr. Lichtenfeld, Berlin.
Levavaseur & Son, Ussy, Calvados, France.
Manning, J. W., Reading, Mass.
Marc & Co., Woodside, N. Y.
Martichon, Cannes, France (Tender plants, set in the open).
Mooy, Polman, Haarlem, Holland.
Moser & Son, M.
New York, State of.

Oregon, State of.
Paillet, L., Vallé de Chatenay (Seine), France.
Parsons & Sons Co., Flushing, N. Y.
Pennock, Chas. E. Bellevue, Col.
Peterson, P. S., 164 La Salle St., Chicago, Ill.
Pinney, George, Evergreen, Door Co., Wis.
Pitcher & Manda, Short Hills, N. J.
Rea Bros., Norwood, Mass.
Ricker Co., E. H., Elgin, Ill.
Royal Botanic Garden, Berlin, Germany.
Strong, Wm. C., Waban, Mass.
Sturtevant, E. D., Bordentown, N. J.
Tiefenthal, O., Hamburg, Germany.
Todd, A. M., Michigan.
Van Kleef & Son, W., Boskoop, Holland.
Vilmorin-Andrieux & Co., Paris, France.
Waterer, A., Surrey, England.
Wisconsin Hort. Soc'y, by J. C. Plumb & Son, Milton, Wis.
Wrede. H., Luneberg, Germany.
Zirngiebel, Dennis, Needham, Mass.

The Dresden florist and nurserymen made a collective exhibit of various plants, both indoors and out, of roses, azaleas, camellias, etc. The firms associated in these collections, as officially annouced from Dresden, were the following:

1. *Roses.*

Robert Beyer.
Bernh. Hähnel.
Bernh. Haubold.
C. W. Mietzsch.
Otto Olberg.
Herm. Raue.
Albin Richter.
L. R. Richter.
Paul Ruschpler.
Rob. Weissbach.

2. *Azaleas.*

Robert Beyer.
O. Hartl.
Gebr. Knöfel.
Emil Liebig.
C. W. Mietzsch.
Otto Olberg.
Albin Richter.
L. R. Richter.
T. J. Seidel.
Rob. Weissbach.

3. *Camellias.*

Emil Liebig.
C. W. Mietzsch.
Otto Olberg.
Albin Richter.
L. R. Richter.
T. J. Seidel.

4. *Lilacs.*

Rob. Weissbach.

List of Woody Plants in the General Outdoor Competitive Exhibits.

Abies alba.
— — aurea.
— — cœrulea.
— Alcockiana.
— — nova.
— amabilis.
— balsamea.
— — pendula.
— brachyphylla.
— Canadensis.
— — atrovirens.
— — macropylla.
— — repanda glauca.
— — Sargentii pendula.
— cephalonica.
— concolor.
— — magnifica.
— — violacea.
— Douglasi.
— — argentea.
— Englemanii.
— excelsa.
— — aurea.
— — conica.
— — Cranstonii.
— — Dicksoni.
— — diffusa.
— — echiniformis.
— — elata.
— — elegans.
— — Ellwangeriana.
— — eremita.
— — Finedonensis.
— — Gregoriana.
— — horizontalis.
— — inversa.
— — Maxwelliana nana.
— — monstrosa.
— — mucronata.
— — pendula.
— — procumbens.
— — pumila.
— — pumila glauca.
— — pygmaea.
— — pyramidalis.
— — pyramidalis compacta alba.
— — Remontii.
— Fraseri.
— grandis.
— Hookeriana.
— Kosteriana glauca.
— lasiocarpa.
— Maximowiczii.
— Menziesii.
— Mertensiana.
— Morinda.

— nobilis.
— — glauca.
— Nordmaniana.
— — aurea.
— nigra.
— — Doumetti.
— — pumila.
— — Donana.
— Omorika.
— orientalis.
— Pattoniana.
— pectinata.
— — pendula.
— — pyramidalis.
— Peleponensis.
— pichta.
— Pinsapo.
— polita.
— pungens.
— — glauca.
— Schrenkiana.
— Sieboldii.
— Sitchensis.
— Smithiana.
— subalpina.
— Veitchii.
Acer campestris variegatum.
— Colchicum rubrum.
— dasycarpum.
— — crispum.
— — tripartitum.
— — Weirii.
— Japonicum.
— — aconitifolium.
— — macranthum.
— — microphyllum.
— Montpeliensis.
— Negundo argenteum variegatum.
— — aureum variegatum.
— — cissifolium.
— palmatum.
— — latifolium purpureum.
— — sanguineum.
— pictum albo-aureum.
— platanoides Schwedlerii.
— — compacta globosum.
— — Reitenbachii.
— polymorphum atropurpureum.
— — cristatum.
— — dissectum.
— — — atropurpureum.
— — palmatifidum.
— — pendulum.
— — pinnatifidum.
— — reticulatum.
— — roseo-marginatum.
— — roseo-pictis.
— — roseum.
— — sanguineum.
— — sanguineum crispum.
— — sanguineum nigricans.
— — variegatum.
— — versicolor.
— Pseudo-platanus Worlei.
— — atropurpureus.
— — foliis variegatis.
— — leopoldii.
— — lutiscentibus.
— reticulatum.
— saccharinum.
— truncatum.
— scolopendrifolium rubrum.
Æsculus Hippocastanum Memmingerii.
— Pavia nana rosea.
Ailanthus glandulosus.
Alnus glutinosa imperialis laciniata.
— — laciniata.
Ampelopsis quinquefolia.
— Veitchii.
Andromeda arborea.
— Japonica.
Aralia Maximowiczii.
Aristolochia Sipho.
Araucaria imbricata.
— Braziliensis.
Aucuba Japonica.
— — crassifolia.
— — fœmina.
— — grandidentata.
— — heterophylla.
— — ilicifolia.
— — limbata.
— — longifolia.
— — macrodantha mascula.
— — macrophylla.
— — maculata.
— — mascula.
— — medio-lutea variegata.
— — nana rotundifolia.
— — salicifolia.
— — variegata.

Azaleas. See page 108. (Those marked J. were exhibited by the Boskoop-Holland Nursery Association, represented by C. H. Joosten, N. Y.; M., by M. Moser, Versailles; P., by S. B. Parsons, New York; V., Ch. Vuylsteke, Ghent; Vn., by J. C. Vaughan, Chicago).

— Adelaide. P. J.
— Admiral de Ruyter. J.
— Alba lutea grandiflora. P.
— Albicans. J.
— Alphonse de Lavallée. J. M.
— Ambroise. J.
— Amœnissima. J.
— Anthony Koster. Vn.
— Antoinnette. J.
— Arborea. P.
— Asa Gray. P.
— Attila. M.

— Aurea floribunda. J.
— Aurora de Roygens. J.
— Baron Edmund de Rothschild. J.
— Beauté Celeste. J.
— Beauté de Flandre. J.
— Belle Tanette. P.
— Bijou de Gent crugge. J.
— Bijou des Amateurs. J.
— Blondine. J.
— Bouquet de Flore. J.
— Bronze Unique. J.
— Cardinal. J.
— Cardoniana. J.
— Charlemagne. J.
— Charles Baumann. J.
— Ch. Rogier. V.
— Chevalier de Reali. J.
— Chromatella. J.
— Coccinea. J.
— Coccinea speciosa. J.
— Comte de Flandre. J.
— Comte de Gomer. J. M.
— Comte de Quincy. J.
— Comte Papadapole. J.
— Comtesse de Kerchove. J.
— Consul Ceresole. J. M.
— Consul Pêcher. J. M.
— Cordon. P.
— Cruenta. P.
— Cymodocée. J.
— Daviesi. J.
— Decus Hortorum. J.
— Distinction. P.
— Dominico Scassi. J.
— Dr. Leon Vignes. J.
— Dr. Reichenbach. Vn.
— Dr. Streiter. J.
— Duc d'Orleans. J.
— Dulcinée. J. V.
— Ebenezer Pycke. J.
— Edison. J. V.
— Elizabeth. J.
— Emil Liebig. Vn.
— Ernest Bach. J.
— Esmeralda. V.
— Eugène. J.
— Famma. M.
— Flammeola. P.
— Flushing Queen. P.
— Formosa. P.
— Frans van der Bom. Vn.
— Frederick de Merode. V.
— Frère Orban. V. J.
— Fritz Quihou. J.
— F. T. Seidel. Vn.
— Geant des Batailles. J.
— General Brialmont. V.
— General Dronot. J.
— General Franff. J.
— General Goffinet. V.
— Glauca stricta. M.
— Gloire de Belgique. V.
— Gloria Mundi. P. J. M.
— Graf Alfred von Niaperg. J.
— Graf von Meran. J.
— Grand duc de Luxembourg. J.
— Grande Monarque. J.
— Grandeur Triomphante. J.
— Guelder rose. J.
— Guillaume II. J.
— Henri Concience. V.
— Heureuse Surprise. J.
— Honneur de la Belgique. J.
— Hortulanus. Vn.
— Hugo Koster. Vn.
— Ignea nova. J.
— Isabelle van Houtte. J. M.
— Josephine Klinger. J.
— Julius Cæsar. J.
— Kissena. P.
— Knapp Hill Seedlings. Anthony Waterer.
— Leibnitz. J.
— Lineata Superba. J.
— Louis Aimée. J.
— Louis Bonarparte. J.
— Louis Hellebuyk. J.
— Madame Legrelle d'Hanis. J.
— Madame Thiebaud. J.
— Magnifica albicaus. J.
— Magnificans. J.
— Marcus Aurelius. J.
— Margaretha. J.
— Marie Van Houtte. M.
— Marie Verschaffelt. J.
— Mathilda. J.
— Mélanie. J.
— Mignon. V.
— Mina Van Houtte. J.
— Minerva. J.
— Mirabilis. J.
— Mr. Desbois. V.
— Multiflora. J.
— Nancy Waterer. J.
— N. Beets. Vn.
— Nero. J.
— Occidentalis. J.
— Optima. P.
— Oswald de Kerchove. V.
— Pallas. J. M.
— Perfecta. J.
— Perpetua. J.
— Prince Baudium. V.
— Prince Budeweiss. J.
— Prince Guillaume. J.
— Prince Henri des Pays-Bas. J.
— Prince of Orange. P.
— Princesse Adrienne. J.
— Princesse Charlotte. J.
— Professor Kirtland. P.
— Professor Koster. J.
— Punicea. P.
— Queen Victoria. J.
— Raphael de Smet. J.
— Reine Louise. J.
— Remarquable. J. M.
— Rembrandt. J.
— Richardii. P. J.
— Roi de Belges. P. J.
— Roi des Feux. J.
— Rosea formosissima. J.
— Rosea lineata. P. J.
— Rosea rotundifolia. P. J.
— Rose Chérie. J.

— Rose Marie. J.
— Rosette. J.
— Roseum elegans. M.
— Schiller. J.
— Sinensis alba grandiflora. J.
— Souvenir de Louis Van Houtte. V.
— Triumphant. P.
— Unique. J.
— Van Houtte flore pleno. J.
— Versicolor. P.
— Versicolor nova. J.
— Victoria. J.
— W. E. Gumbleton. J.
— William Cullen Bryant. P.
— Wilhelm III. J.

Following are the azaleas exhibited indoors. Some of the Indian azaleas were also shown in the German exhibit on the wooded island, in the Berlin Botanic Garden exhibit. Those marked O., were exhibited by Otto Olberg, Dresdren; V., by Ch. Vuylsteke, Ghent; Jp., by the Japanese Commission.

A. Indian or Evergreen Types.

— A. Borsig. V.
— Admiral Tegethoff. O.
— Akebono. Jp. Single white.
— Alba crispiflora. O.
— Alba fimbriata plena. O.
— Alba magnifica, O.
— Alba speciosa plena. O.
— Alfred Mame. V.
— Alice. O.
— Alpenrose. O.
— Alphée. O.
— Amis du Coeur. V.
— Anna Klein. O.
— Antigone. O. V.
— Antoinette Thelemann. O.
— Apollon (Cruyssen) white. O. V.
— “ (Schurz) dark scarlet. O.
— Arlequin or Harlequin. O. V.
— Baron. O.
— Baronne de Vriere. O. V.
— Benimanju. Jp.
— Bernhard Andreæ. O. V.
— Bernhard Andreæ alba. O. V.
— Bignoniæflora plena. O.
— B. S. Williams. O. V.
— Camelliæflora. O.
— Carmen. O.
— Caroline de Moor. V.
— Caruel Vervaene. V.
— Ceres. O. V.
— Chas. Van der Bank. V.
— Cocarde orange. O. V.
— Colomba. O. V.
— Comte Charles de Kerchove. O.
— Comte de Chambord. O. V.
— Comte de la Torre. V.
— Comte de Paris. O.
— Comtesse de Beaufort. V.
— Concordia. O.
— Czar Alexander III. O.
— Dame Mathilde. O.
— Dante. O.
— David Milne Home. O.
— Deutsche Perle. O. V.
— Diablotin. O.
— Doctor de Mil. O. V.
— Doctor E. von Regel. O. V.
— Doctor Hermann Weigel. O.
— Doctor Karl Koch. O.
— Doctor Mezger. O. V.
— Doctor D. Moore. O. V.
— Doctor Wilh. Neubert. O.
— Donar. O.
— Dorothea. V.
— Dryade. O.
— Duc de Cumberland. V.
— Duc de Nassau. V.
— Duchesse de Fernan Nunez. O.
— Eborina plena. O.
— Edmund Vervaene. O. V.
— Elise Lieber. O.
— Empereur des Biesil. O. V.
— Ernst Papenberg. O.
— Eros. O. V.
— Etendard de Flandre. V.
— Fee. O.
— Flambeau. V.
— Flora. O.
— Formosa grandiflora. O.
— Fortuna. O.
— Frau Emil Liebig. O.
— — Hermann Seidel. O.
— — M. Mardner. O.
— — Oberbürgermeister Cassian. O.
— — Pauline Völker. O.
— — Sophie Scarisbriek. O.
— Frauenlob. O.
— Franz Szirovi. O.
— Frère Lefebvre. V.
— Friedrich der Grosse. O.
— Fürstin Bariatinski. O.
— Futaegasumi. Jp. Light brick-red. Small.
— Gartendirektor Krause. O.
— Generalpostmeister Stephan. O.
— General von Werder. O.
— Germania. O.
— Giroflé. O.
— Goldelse. O.
— Graf Franz Thun. O.
— Gräfin Anna Thun. O.
— — Olfa Choteck. O.

— Grossfürstin Helene. O.
— Grossherzog Ludwig von Hesser. V.
— Harlequin or Arlequin. O. V.
— Helene Bruggemann. O. V.
— — Neumann. O.
— — Thelemann. O.
— Hermann Seidel. O.
— Hermoine. O. V.
— Hermosa. O.
— Hexe. O.
— Higomurasaki. Jp.
— Hinodegiri. Jp.
— Hitoshio. Jp.
— Hofgärtner Michælis. O.
— Hofgärtner Siebold. O.
— Honkiri. Jp.
— Ibis Rose. O.
— Illustration. O.
— Irena. O.
— Isis. V.
— James Veitch. O.
— John Gould Veitch. V.
— Johanna Bouscher. V.
— Johanna Gottschalk. O.
— John Lyall. O.
— Josepha Bernud. O.
— Joseph de Schryver. O.
— Jules de Schryver. O.
— Juliette. O.
— J. W. Moore. O. V.
— Kaiser Wilhelm. O.
— Kaiserin von Indien. O.
— Kasugano. Jp.
— König Albert. O.
— Königin der Weissen. O.
— — Louise von Preussen. O.
— Koshigi-no-yuki. Jp.
— Kotsubaki. Jp.
— Kronprinzess Victoria. O.
— Kunigunde Emmel. O.
— Lactea plena. O.
— La Déese. O.
— La Reine des Blanc. V.
— Le Flambeau. O.
— Lenkotea. V.
— Liebigs superba. O.
— Lina Born. O.
— Lohengrin. V.
— Louise Bluth. O.
— — Margotten. O.
— — Vervaene. V.
— Luna. O.
— Madame Auguste Lemonier. O.
— Madame Auguste Van Gaert. O. V.
— Madame de Ghellink. O.
— Madame de Grève. O. V.
— Madame de Kerchove-Lippens. O.
— Madame Estelle Cuvelier. O.
— Madame J. de Kneef. O.
— Madame Louis van Houtte. O. V.
— Madame Louis Vervaene. O.
— Madame Paul de Schryver. V.
— Madame van der Cruyssen. O. V.
— Madame Wolf. O.
— Madeleine. O.
— Madamoiselle Louise de Kerchove. O. V.
— Madamoiselle Marie van Houtte. O.
— Marie Planchon. V.
— Marquis of Lorne. V.
— Marshall P. Wilder. V.
— Max von Forckenbeck. O.
— Memoir de Louis Van Houtte. O. V.
— Mitsusomekuruma. Jp. fls. very small, greenish white, odd.
— Monsieur Labrousse. O.
— Mr. R. Verlinden. V.
— Mrs. Turner. V.
— Murasakibata. Jp. Bright rose pink, semi-double.
— Neige et Cerise. O.
— Nicholaus Schaurer. O. V.
— Niobe. O. V.
— Noblissima. O.
— Norma. O.
— Oberst von Kutsinsky. O.
— Oswald. O.
— Othello. O. V.
— Otto Olberg. O.
— Perle de Gand. V.
— Phœbus. O.
— Pluto. O.
— President Aug. Van Geert. O.
— — Benningsen. O.
— — Ghellink de Wille. O.
— Prince Friedrich Carl von Preussen. O.
— Prince Ludwig von Bayern. O.
— Prince Rudolphe. O. V.
— Princesse Beatrice. O.
— Princesse Clementine. O.
— Princesse Louise. V.
— Princesse Victoria. O. V.
— Professor Walther. O.
— Professor Wittmak. O.
— Proserpina. O.
— Punctulata fl. pl. V.
— Raphael. V.
— Regierungsrath von Eschwege. O.
— Reine des Anateurs. O.
— Remembrance of Lady Eastings. O. V.
— Richard Wagner. O.
— Roi d'Hollande. V.
— Rosabella. O.
— Rosea picta. O.
— Rose von Kamienietz. O.
— Sacuntala. O. V.
— Sakurakiri. Jp. Pink, white, small.
— Scharlachröschen. O.
— Schiller. O.
— Schnee. O.
— Seduction. O.
— Selvi de Moor. O.
— Shirakiri. Jp.

— Sigismund Rucker. O.
— Simon Mardner. O.
— Souv. d'Arthur Veitch. O.
— Souv. de Mat. Rud. Abel. O.
— Souv. de Prince Napoleon. O.
— Souv. du Prince Albert. O. V.
— Stella. V.
— Striata Formossisima. O.
— Talisman. O.
— Theodore Reimers. V.
— Triomph de Doubles Blancs. O.
— Unica. O.
— Vervaeneana. O. V.
— Vestahn. V.
— Weihnachtsprinzess. O.
— Wilhelm Scheurer. O.

B. Deciduous Types.

— Aïda. V.
— Alphonse Lavallée. V.
— Baron Edmond de Rothschild. V.
— Byron. V.
— Ch. Francois Lupis. V.
— Chas. Kekulé. V.
— Comte de Gomer. V.
— Comte Papadapole. V.
— Consul Pêcher. V.
— Ernest Bach. V.
— Freya. V.
— Hora. V.
— Kaparenge. Jp.
— Karenka. Jp.
— L. Titun. V.
— Milton. V.
— Madame Caroline Legrelle d'Hanis. V.
— Mr. Desbois. V.
— Murillo. V.
— Norma. V.
— Phebe. V.
— Phidias. V.
— Praxitele. V.
— Ribera. V.
— Rijukyu. Jp.
— Sekimori. Jp.
— Velasquez. V.
— Virgile. V.
— W. E. Gumbleton. V.
Bambusa violescens.
Benthamia Japonica.
Berberis vulgaris atropurpurea.
— Aquifolium.
— — fascicularis.
— — heterophylla.
— dulcis compacta.
— — nana.
— Fortunei.
— Japonica.
— — Bealii.
— Neubertii.
— stenophylla.
Betula alba Youngei.
— — atropurpurea.
— — laciniata.
— nana.
— papyracea.
— rotundifolia.
Bignonia radicans.
Biota (or Thuya) orientalis.
— — Defresniana.
— — elegantissima.
— — falcata nana.
— — Japonica.
— — — aurea variegata.
— — minima glauca.
— — monstrosa.
— — nana stricta.
— — pyramidalis.
— — — compacta.
— — semperaurea.
— — Zuccariniana.
Bruckenthalia spiculifolia.
Buddlea intermedia.
Buxus Balerica.
— microphylla.
— sempervirens.
— — argentea marginata.
— — aurea.
— — aurea compacta.
— — conica.
— — elegantissima.
— — foliis marginatis.
— — Handisworthii.
— — macrophylla rotundifolia.
— — rotundifolia.
— — — aurea.
— viridis.
Caragana arborescens.
— — pendula.
Carpinus Betulus marginata.
Castanea vesca.
Catalpa speciosa.
— — purpurea.
— syringæfolia aurea.
Ceanothus roseus elegans.
Cedrus Atlantica aurea.
— — Camelie.
— — glauca.
— — pyramidalis.
— Deodara.
— — aurea.
— — crassifolia.
— — variegata.
— Libani pendula.
Celtis occidentalis.
Cephalotaxus Fortunei.
— drupacea.
Cercis Japonica.
Chionanthus Virginicus.
Clematises:
— Alba.
— Albertine.
— Albert Victor.
— Alexandra.
— Amalia.
— Andre Leroy.
— Aurealeana.
— Azurea.
— Azurea grandiflora.
— Bangholm Belle.

— Belle d'Orleans.
— Belle Nantaise.
— Bicolor Sieboldii.
— Daniel Deronda.
— Duchess of Edinburg.
— Duchess of Teck.
— Elaine.
— Empress Eugene.
— Emma Margaretha.
— Epiphana.
— Epipharia.
— Etoile de Paris.
— Etoile Violette.
— Eugene Delatre.
— Fairy Queen.
— Faust.
— Florida pallida.
— Fortunatii.
— Fortunei.
— Francois Morell.
— Fulgens.
— Gigantea.
— Gipsy Queen.
— Glorie de St. Julien.
— Grand Duchess.
— Helena.
— Henrietta de Poligny.
— Henryii.
— Herbert Spencer.
— Hybrida fulgens.
— Hybrida purpurea.
— Hybrida Sieboldii.
— Integrifolia Durandii.
— Iris.
— Jackmanii.
— — alba.
— Jackmanii superbus.
— Jean de Arc.
— John Gould Veitch.
— Juliette Doder.
— Lady Biville.
— Lady Caroline Neville.
— Lady Stralf de Radcliffe.
— La France.
— lanuginosa.
— — Belisaire.
— — candida.
— — nivea.
— — nova.
— La Mauve.
— Lawsoniana.
— Le Cid.
— Liliana floribunda.
— Lord Beaconsfield.
— Lord Gifford.
— Lord Henry Lenox.
— Lord Mayor.
— Lord Londsborough.
— Lord Napier.
— Lord Neville.
— Louis Van Houtte.
— Lucy Lemoine.
— Madame Baron Veillard.
— Madame Edouard Andrè.
— Madame Elise Schenk.
— Madame Furtado Heine.
— Madame G. Boucher.
— Madame Granger.
— Madame Meline.
— Madame Moser.
— Madame Van Houtte.
— Mademoiselle Torriana.
— Magnifica.
— Marie Brisselot.
— Marie Dessorse.
— Marie Lefebvre.
— Mayflower.
— Max Leitchlin.
— Mrs. Baker.
— Mrs. Cholmondelay.
— Mrs. Kennett.
— Mrs. Howard Vyse.
— Mrs. Le Coultre.
— Mrs Mary.
— Nelly.
— Nigricans.
— Otto Frœbel.
— Patens.
— Paul Avenal.
— Perfecta.
— Perle d'Azure.
— President.
— President Grèvy.
— Prince of Wales.
— Prophetess.
— Proteus.
— Purpurea Elegans.
— Queen Guineveve.
— Ramona.
— Reine Blanche.
— Rendaslerii.
— Rubella.
— Sophie flore pleno.
— Splendida.
— Standishii.
— Star of India.
— Stella.
— Sylph.
— Symeana.
— The Gem.
— Thomas Moor.
— Thomas Tennett.
— Trobridgensis.
— Undine.
— Uranus.
— Victor Cresole.
— Victoria.
— Victor Lemoine.
— Ville de Paris.
— Vitacella alba.
— — Kermesina.
— — Modesta.
— — Rosea.
— — Rubra grandiflora.
— — Venosa.
— Vitalba purpurea.
— Vitallina purpurea.
— William Kennett.
— Xerxes.
Clethra barbinervis.
Colutea arborescens fl. luteo.
— — fl. rubro.
Cornus alternifolia.
— florida rubra.
— — pendula.
— Mas tricolor.

— — variegata.
— paniculata.
— sanguinea.
— — elegantissima.
— — Spathii.
— stolonifera.
Corylus Avellana atropurpurea.
— — aurea.
Cotoneaster microphylla.
Cratægus Carrierei.
— coronaria.
— Crus-galli splendens.
— lucida.
— Oxyacantha fl. rubra. pl.
— — pendula.
— — fl. punicea.
— — fl. alba pl.
— pyracantha Llandii.
Cryptomeria Japonica.
— — compacta.
— — spiralis.
— — viridis.
Cunninghamia Chinensis.
— — glauca.
Cupressus Lawsoniana.
— — alba.
— — — variegata.
— — — spica.
— — — pendula.
— — Allumii.
— — argentea Overeynder.
— — argentea variegata.
— — Bowlerii pendula.
— — compacta.
— — densa.
— — elegans.
— — elegantissima.
— — erecta viridis.
— — filiformis elegans.
— — gracilis.
— — lutea.
— — lutescens.
— — minima.
— — — glauca.
— — monumentalis glauca.
— — nana variegata.
— — patula.
— — pendula.
— — pulcherrima.
— — pyramidalis alba spica.
— — robusta.
— — Rosenthalii.
— — Silver Queen.
— — stricta viridis.
— — — cœrulea.
— — sulphurea.
— — versicolor.
— — viridis.
— — Woorleyi.
— — Youngii.
Cupressus macrocarpa.
— Nutkanus.
— — glauca.
— — pendula.
— thuyoides.
— — variegata.
— — atrovirens.
Cytisus Laburnum.
— — Adamii.
— — semperflorens.
— purpureus.
— — albus.
— scoparius Andreanus.
— trifoliatus.
Deutzia crenata.
— — candidissima.
— — fl. alba pl.
— — "Pride of Rochester."
— gracilis.
— — argentea variegata.
Dimorphanthus Mandschuricus aureo-marginatus.
— — foliis argenteis variegatis.
Elæagnus longipes.
— Simoni.
Euonymus alatus.
— atropurpureus.
— Europæus.
— — atropurpureus.
— — elatus.
— Japonicus.
— — argentea.
— — Duc d'Anjou.
— — Dux Andegavensis.
— — elegans aurea.
— — elegantissima.
— — flavescens.
— — latimaculata.
— — macrophyllus.
— — — fol. variegatus.
— — marginata alba.
— — — aurea.
— — pulchellus.
— — — variegatus.
— — pyramidalis.
— latifolius.
— myrtifolius.
— radicans.
— — Carrierei.
— — foliis argenteis marginatis.
— — foliis variegata.
Fagus sylvatica atropurpurea.
— — castanæfolia.
— — crispa.
— — heterophylla.
— — laciniata.
— — purpurea pendula.
— — tricolor.
— — variegata.
Forsythia suspensa.
— viridissima variegata.
Fraxinus excelsior.
— — aucubæfolia.
— — aurea.
— — fol. argenteis marginata.
— — fol. aureo marginata.
— — globosa.
— — heterophylla.
Glyptostrobus pendula.
Halesia tetraptera.
Hedera Helix arborea.
— — — cardifolia.
— — — maculata.
— — Hibernica.
— — Maderensia.
Hibiscus Syriacus.

— — variegata.
Hippophae rhamnoides.
Hydrangea cordata.
— paniculata grandiflora.
Hypericum Moserianum.
Ilex Aquifolium.
— — argenteum.
— — calamistratum.
— — compactum aureum.
— crenata.
— — variegata.
— — crispa.
— — ferox.
— — — variegata.
— — flammea.
— — — alba.
— — latifolium.
— — laurifolium.
— — marginata grandidentata.
— — nobilis foliis argenteis.
— opaca.
Itea Virginica.
Juglans nigra.
Juniperus Bermudiana.
— Canadensis.
— compressa erecta.
— communis.
— — cracovia.
— — hibernica.
— cupressifolia mas.
— — fœmina.
— drupacea.
— echiniformis.
— excelsa.
— — stricta.
— Fortunei pyramidalis.
— horizontalis.
— Japonica.
— — aurea.
— — — variegata.
— Neaboriensis.
— Oxycedrus.
— pendula viridis.
— Reevesiana.
— rigida.
— Sabina cupressifolia.
— — variegata.
— — vera.
— Sinensis.
— — alba variegata.
— — aurea.
— — erecta.
— — glauca.
— — mascula.
— Virginiana.
— — Bermudiana.
— — Chamberlainii.
— — elegans.
— — elegantissima.
— — glauca.
— — Schotti.
— — tripartita.
— — Whittmanii.
— Sp. from Japan.
— Sp. Nord de China.
Kalmia latifolia.
Kerria Japonica fl. pl.
— — fol. variegata.
Kœlreuteria paniculata.
Ligustrum coriaceum.
— Japonicum excelsum.
— — lucidum.
— — robustum.
— — spicatum.
— ovalifolium tricolor.
— — aureum marginatum.
— Sinensis.
— vulgare.
Liquidamber Styraciflua.
Liriodendron Tulipifera.
— — aurea marginata.
Lonicera brachypoda.
— — Halli.
— Caprifolium.
— — Belgica.
— sempervirens.
— — aurea.
— Tatarica.
Magnolia acuminata.
— alba superba.
— Alexandriana.
— amabilis.
— — nova.
— auriculata.
— cordata.
— grandiflora Nannetensis.
— — Galisonensis.
— hypoleuca.
— Lennei.
— parviflora.
— reflorescens.
— rustica.
— Soulangeana.
— speciosa.
— — nova.
— stellata.
— Yulan.
Morus Moretti.
—Teas' weeping Mulberry.
Osmanthus ilicifolius.
— — rotundifolius.
Pæonia Moutan.
Periploca Græca.
Phelodendron Amurense.
Philadelphus cordatus.
— coronarius.
— — aureus.
— — Zeyheri.
— — fl. pl.
— dentatus foliis variegatis.
— grandiflorus.
— nivalis.
— speciosus.
Phillyrea latifolia.
— laurifolia.
— longifolia.
Pinus Austriaca.
— Banksiana.
— Canariensis.
— Cembra.
— — Helvetica.
— contorta.
— excelsa.
— flexilis.
— inops.
— monophylla.

— monticola.
— Mughus.
— — pumila.
— Murrayana.
— parviflora.
— Peuce.
— ponderosa.
— — scopulorum.
— resinosa.
— Strobus.
— — compacta nivea.
— — compacta pendula.
— — excelsa.
— — nana.
— — umbraculifera.
— sylvestris.
— — aurea.
— — densiflora.
— — globosa.
— — Rigaensis.
Platanus orientalis foliis variegatis.
Podocarpus Japonicus.
— Korianus.
Populus alba Bolleana.
— Carolina.
— monolifera.
— — Van Geerti.
— nigra fastigiata.
Prumnophytis elegans.
Prunus Avium fl. pl.
— — fl. rubra pl.
— — pendula.
— Chamæcerasus (as P. pumila).
— — variegata.
— hortensis fl. pl.
— Japonica rosea pendula.
— Laurocerasus.
— — Caucasica.
— — Colchica.
— — crispifolia.
— — Lusitanica.
— — rotundifolia.
— Padus.
— — aurea.
— Pissardi.
— pumila.
— Sinensis fl. rubra pl.
— — fl-pl.
— triloba.
— Virginiana.
— vulgaris purpureis.
— Watereri.
Pseudolarix Kœmpferii.
Ptelea trifoliata.
— — aurea.
Pterostyrax hispidum.
Pyrus angustifolia, Bechtel's Double Flowering Crab.
— Aucuparia pendula.
— baccata floribunda.
— — foliis aureo striata.
— — pendula.
— Japonica.
— — Maulei.
— — Moerloosii.
— quercifolia.
— salicifolia.
— Sorbus Fifeana.
— Toringo.
Quercus Americana magnifica.
— cerris dentata.
— Ilex.
— palustris argentea variegata.
— pectinata.
— pubescens cucullata.
— robur atropurpurea.
— — aurea variegata.
— — concordia.
— — nigrescens.
Retinospora ericoides.
— filifera.
— — aurea.
— leptoclada.
— — Andelyensis.
— lycopodioides.
— obtusa.
— — alba spica.
— — compacta.
— — gracilis.
— — nana.
— — — aurea.
— pisifera aurea.
— — lutescens.
— plumosa.
— — aurea.
— — variegata.
— — viridis.
— squarrosa.

Rhododendrons. See page 109. (A. W., shown by Anthony Waterer, Knapp Hill, near London; B., Blaauw & Co., Boskoop, Holland; Bm., Belgium exhibitors—Ch. Vuylsteke, Horticultural School, Alexis Dalliere, Desmet Brothers, all of Ghent or vicinity; C., Croux & Son, Sceaux, near Paris; EB., Ellwanger & Barry, Rochester, N. Y.; J., Boskoop-Holland Nursery Association, represented by C. H. Joosten, N. Y.; K., W. Van Kleef & Sons, Boskoop, Holland; Kl., Fred Kelsey, New York (John Waterer); M., M. Moser, Versailles, France; P., Parsons & Son, Flushing, N. Y,; PM., Pitcher & Manda, Short Hills, New Jersey (Waterer); S., T. J. Seidel, Dresden, Germany).

— A. B. F. Mitford. AW.
— Abraham Lincoln. P.
— Adèle. B.
— Alarm. J. C. Kl.
— Alba superba. J.
— Albert Barra. M.
— Album elegans. AW. EB. J. P. Kl. M.
— Album grandflorum. AW. P.
— Album perspicuum. P.
— Album Splendidum. J.
— Alexander Addie. J. B. M.
— Alexandre Prothere. Bm.
— Amilcar. B. Bm.
— Amphion. AW.
— Annica Bricoque. M.
— Atela. Bm.
— Atrococcineum. J. B.
— Atrosanguineum. EB. J.
— Aucubæfolia. B.
— Auguste van Gaert. J.
— Aurora. B. K.
— Austin Layard. C.
— Ayrshire. AW.
— Bai Waterer. Kl.
— Barclayanum. J.
— Baron Shroeder. AW.
— Beaumant. C.
— Beranger. C.
— Bernhard Lauterbach. S.
— Bertram. AW.
— Bianchi. B.
— Bicolor. J. P.
— Blandyanum. K. EB. J. B. M.
— Blandyanum superbum. M.
— Blatteum. J. B.
— Boule de Neige. K. J.
— Boquet Royal. Bm
— Broughton. Bm.
— Butlerianum. PM. Kl.
— B. W. Currie. Kl.
— Bylsianum. K. J.
— Campanulatum hybridum. C.
— Candidissimum. AW.
— Candidum. Kl.
— Caractacus. K. B. J. M. C. Bm.
— Catawbiense. K. B. M.
— Catawbiense alba. M.
— Catawbiense Boursault. M.
— Catawbiense grandiflorum. AW.
— Celestinum. AW.
— Cetewayo. AW.
— Chameleon.
— Charles Bagley. AW. J. M. Bm.
— Charles Dickens. AW. J. M.
— Charles Fisher. AW.
— Charles Noble. PM. J.
— Charles Thorold. AW.
— Chionoides. J. B.
— Clara. Bm.
— Cloe. B.
— Coerulescens. AW.
— Comte Chas. DeKerkove. Bm.
— Comte de Gomer, J. Kl.
— Comptesse de Roquette-Buisson. M.
— Comptesse Salvi. Bm.
— Concessum. AW. K. B. M. C.
— Concurrent. J.
— Conspicuum crispum. J.
— Countesse of Clancarty. Kl.
— Countess of Heddington. Bm
— Countess of Wilton. J. B.
— Crimson. AW.
— Crown Prince. Bm. C. J.
— Cruentum B. Bm.
— Cunninghami. K.
— Curator. M.
— Cyaneum. Kl.
— Cynthia K. Bm. J. B.
— Delicatissimum. P.
— Delicatum. AW.
— Diendomie. Bm.
— Docteur de Mill. C.
— Docteur Lemoine. C.
— Doncaster. AW.
— Duc Adolphe de Nassau. C. Bm.
— Duc de Brabant. C.
— Duc de Cambridge. M.
— Duc de Malakoff. C.
— Duchess de Dino. M.
— Duchesse de Morny. C.
— Duchess of Bedford. AW.
— Duchess of Connaught. Kl.
— Duchess of Sutherland. AW. Kl.
— Earl of Shannon. K. J. B.
— Eclipse. Bm.
— Edward S. Rand. AW.
— Edwin Landerer. J.
— Elfride. J. C.
— Ellen Cook. J.
— Emperor Francois Joseph. M.
— Erectum. PM. C.
— Etoile des Jardins. C.
— Evelyn. K. B. M. Bm.
— Everestianum. AW. PM. EB. J. P. Kl. M.
— Fatuosum fl. pl. AW. K. J. B. Kl.
— F. D. Godman. AW.
— Fleur de Marie. Kl.
— Florence. AW.
— Flushing. P.
— Francis Dickson. J. B. C.
— Frau Rosalie Seidel. J.
— Frederich Hankey. J. Bm.
— Frederick Waterer. AW. K. J. Kl.
— Garibaldi. AW.
— Gem. C.
— General Cabrera. B. J. M.
— General Chanzy. C.
— General Grant. P.
— General Sherman. P.
— General Van Sweiter. J.
— George Cunningham. Bm.
— George Paul. AW.
— George Peabody. M.
— Gloriosum. Kl.
— Glymeana. J.
— Grand Arab. Bm.
— Grandiflorum. J. P.

— Guido. AW. C.
— Hayes. M.
— Hector. J.
— Helene Schiffner. S.
— Helen Waterer. AW. J. Kl. M.
— Herbert Parsons. P.
— Hippolyte Van de Wolstyne. J.
— H. W. Sargent. AW.
— Iago. J.
— Jacksoni. K. B.
— James Bateman. J.
— James Macintosh. AW.
— James Marshall Brooks. AW. K. J. B. M.
— James Mason. AW. K.
— James Nasmyth. AW.
— J. H. Agnew. Kl.
— John Spencer. AW. J.
— John Walter. AW. J. B. Kl. M.
— John Waterer. K. J. B. Kl. M. C. Bm.
— Joseph Whitworth. AW. J. M. C.
— Kaiser Wilhelm. S.
— Kate Waterer. AW. J. B.
— Kathe Mette. S.
— Kettledrum. AW.
— La Brilliante. J.
— Lady Annette de Frafford. J.
— Lady Armstrong. AW.
— Lady Clermont. AW. J. B. M. Bm.
— Lady Eleanor Cathcart. AW. PM. J. B. Kl. M. C. Bm.
— Lady Francis Crossley. AW.
— Lady Godiva. C.
— Lady Rolle. C.
—Lady Strangford. AW. PM. Kl. J.
— Lady Tankerville. AW.
— Lefebvrianum. PM.
— Leoparde. J.
— Le Porissin. J.
— Leviathan. M.
— Lord Derby. M. Bm.
— Lord John Russel. J. C.
— Lord Selbourne. Bm.
— Lord Wolseley. PM.
— Lorenzo. C.
— Ludwig Leopold Liebig.
— Maculatum nigrum. J.
— Maculatum nigrum superbum. J.
— Madame Carvalho. AW. K. J. B. Kl.
— Madame Emile Boyan. C.
— Madame Faucillon. C.
— Madame Masson. J. B. C.
— Madame Rosenthal. K.
— Madame Stetzner. C.
— Madame Vergeot. Bm.
— Madame Wagner. K.
— Mademoiselle Masson. M.
— Magnificum. M.
— Magnum bonum. M.
— Marchioness of Landsdowne. AW. M.
— Maroon. K. Bm. AW. B. J.
— Marechal Canrobère. C.
— Marie Stewart. AW.
— Marquise de Pange. M.
— Martin H. Sutton. AW. M.
— Matchless. J. B. C.
— Melton. AW.
— Memoir. AW.
— Mercator. Bm.
— Michael Waterer. AW. K. B. Kl. M. Bm.
— Minnie. AW. PM. J. Kl. C. Bm.
— Miss Jekyll. AW.
— Monsieur Bertin. M.
— Monsieur Burella. M.
— Monsieur Thiers. J.
— Morion. AW.
— Mrs. Cameron. J.
— Mrs. Charles Thorold. AW.
— Mrs. Fitzgerald. M. Bm.
— Mrs. Frederick Hankey. AW
— Mrs. Hemans. PM. C.
— Mrs. Heneage. J.
— Mrs. John Clutton. AW. J. B.
— Mrs. John Penn. AW. J. B. Bm.
— Mrs. John Price Lade. AW.
— Mrs. John Watterer. AW. K. JB. Bm. Kl.
— Mrs. Mendel. M.
— Mrs. Mercer Henderson. Kl.
— Mrs. Milner. AW. K. B. J.
— Mrs. R. S. Holford. K. J. B. Bm.
— Mrs. Shuttleworth. AW.
— Mrs. S. Simpson. AW.
— Mrs. Thomas Agnew. AW.
— Mrs. Thomas Wain. AW.
— Mrs. French. PM.
— Mrs. Walter. J. Kl. M.
— Mrs. Wm. Agnew. M.
— Napoleon Baumann. J.
— Nelly Moser. M.
— Nero. Kl.
— Norma. AW.
— Notabile. J.
— Octave Schrïjer. Bm.
— Odoratum. M.
— Old Part. J. Bm.
— Omar Pacha. C.
— Papilionaceum. Kl.
— Pelopidas. Kl.
— Perfection. AW. C.
— Perrugino. J. Bm.
— Perryanum. PM.
— Picturatum. AW.
— Ponticum roseum. K.
— President Joseph Napoleon Baumann. C. Bm.
— Prince Alexander. J.
— Prince Camille de Rohan. K. B. J.
— Prince Eugene. C.
— Prince of Wales. Bm.
— Princesse Hortense. PM. Kl. M.
— Princesse Louise. K. J. B.

— Princess Mary of Cambridge. J. Kl. M. C. Bm.
— Professor Dr. Reichenbach. S.
— Professor Koch. J.
— Punctatum rubrum. M.
— Purity. AW. J. M.
— Purpureum crispum. P.
— Purpureum elegans. AW.
— Quadroona. M.
— Queen Victoria. K. B.
— Raphæl. K.
— Ralph Sanders. AW.
— René Moser. M.
— Resuscitator. C.
— Rt. Hon. Wm. E. Gladstone. Kl.
— Rose of Bagshot. C.
— Roseum elegans. P. Kl.
— Roseum luteum. P.
— Roseum superbum. J. Kl.
— R. S. Field. AW.
— Rubescens. K.
— Salmonea rosea. M.
— Sappho. AW. J. M.
— Schiller. M.
— Scipio. M.
— Senator Sumner. P.
— Sidney Herbert. J.
— Sigismund Rucker. AW.
— Silvio. AW.
— Simon Hevin. J.
— Sir Chas. Napier. Bm.
— Sir John Broughton. C.
— Sir Robert Peel. J. M.
— Sir Thomas Sebright. AW. M C. Bm.
— Snowflake. AW.
— Souvenir du Prince d'Orange. C.
— Star. J.
— Star of Ascot. Bm. J.
— Star of England. Kl.
— Stella. AW. J. B. M. C.
— Stella Waterer. Bm.
— St. Simon. AW.
— Sylph. AW.
— Tamerlane. M.
— The Queen. AW. PM. B. Kl. M.
— The Strategist. M.
— Tippo Sahib. M.
— Titian C.
— Van Dyck. Bm. AW.
— Van Houtte. Bm.
— Vauban. AW. B. J. M.
— Verschafeltii. J. M.
— Vesuvius. K. J. B.
— Victoria. J. B.
— Village Maid. Kl.
— Vivian Grey. AW.
— Vivid. B.
— Voltaire. C.
— Von Siebold. K. B.
— Warrior. J. Bm. B. Kl. M.
— Wm. Austin. K. B. J. Bm.
— William Cowper. J.
— William Milton. C.
— Zampa. M.

Rhus Cotinus.
— glabra laciniata.
Rhodotypos kerrioides.
Ribes floridum
— Lobbi.
— sanguineum.
Rosa rugosa.
— Wichuraiana.
[Also many garden varieties. See p. 113].
Salisburia adiantifolia.
Salix Americana nigra pendula.
— alba.
— — regalis.
— — vitellina aurantiaca.
— Babylonica.
— — Salmoni.
— Capræa pendula.
— — tricolor.
— herbacea.
— palmæfolia.
— retusa.
— rosmarinifolia.
— Sieboldii.
Sambucus nigra aurea.
— — laciniata.
— — pulverulenta.
Sciadopytis verticillata.
Sequoia gigantea.
— — pendula.
— sempervirens.
Skimmia fragrans.
— Japonica.
Spiræa ariæfolia.
— Billardi.
— callosa.
— — alba.
— — Bumalda.
— — crispifolia.
— — semperflorens.
— Fontenaysi.
— — alba.
— Lindleyana.
— luxuriosa.
— opulifolia.
— — aurea.
— prunifolia fl. pl.
— Reevesiana.
— — fl. pl.
— rotundifolia.
— salicifolia.
— Thunbergii.
Staphylea Colchica.
Sterculia platanifolia.
Styrax Americana.
— Japonica.
Syringa dubia.
— Josikæa.
— ligustrina pendula.
— Persica.
— — alba.
— — Pierre Blanc.
— Sinensis Sanguinea rosea.
— — Rothomagensis.
— villosa.
— vulgaris.
— — Charles X.
— — gigantea.

— — Marie Legraye.
— — nana.
— — Rubra de Marley.
— — Ville de Troyes.
— — virginalis.
— — — grandiflora.
Tamarix Africana.
Taxodium distichum.
Taxus baccata.
— — aurea.
— — aurea marginata.
— — Dovastonii aurea variegata.
— — elegantissima.
— — erecta.
— — fastigiata Dovastonii.
— — fructu luteo.
— — Hibernica variegata alba.
— — — variegata aurea.
— — — aurea nova.
— — imperialis.
— — major.
— — Washingtonii.
— Canadensis.
Thuya gigantea.
— — atrovirens.
— — aurescens.
— — semperaurea.
— occidentalis.
— — alba.
— — argentea.
— — aurea.
— — Boothi.
— — Caucasica.
— — Columbia.
— — compacta.
— — conica.
— — Douglas' golden.
— — — pyrmidal.
— — Ellwangeriana.
— — ericoides.
— — glauca.
— — globosa.
— — Hoveyii.
— — pendula.
— — pumila.
— — pyramidalis.
— — Queen Victoria.
— — Siberica.
— — Tom Thumb.
— — variegata.
— — Verveneana.
Thuyopsis borealis.
— — argentea.
— — compacta.
— — glauca.
— dolabrata.
— — variegata.
— laetivirens.
Tilia Americana.
— dasystyla.
— Europæa.
— — laciniata rubra.
— — alba spectabilis.
Torreya myristica.
— nucifera.
Ulmus Americana.
— — gigantea.
— campestris corylifolia nigrescens.
— — Dampierii.
— — — aurea.
— — foliis variegatis.
— — Louis Van Houtte.
— — memorie Louis Van Houtte.
— — monumentalis.
— — purpurea.
— — pyramidalis.
— — variegata argentea.
— montana Camperdownii.
— sativa foliis variegatis.
— umbraculifera.
Viburnum dentatum.
— dilatatum.
— Japonicum Sieboldii.
— — — variegatum.
— Lantana.
— Lentago.
— Opulus.
— — sterilis.
— plicatum.
— Tinus.
Vitis heterophylla variegata.
Weigela Abel Carriere.
— amabilis foliis variegatis.
— hortensis alba nivea.
— Mons. Lemoine.
— nana variegata.
— P. Duchartre.
— rosea.
— Voltaire.
Wistaria frutescens.
— Sinensis.

Perennial Herbs on Exhibition, in the open, at the World's Fair.

Acanthus latifolius.
Achillea Ægyptiaca.
— Millefolium roseum.
— ptarmica fl. pl.
— — The Pearl.
— tomentosa.
Aconitum Fischerii.
— Napellus.
— — bicolor.
Acorus Calamus variegata.
Ægipodium podograria variegata.
Agrostemma (Lychnis) coronaria.
— — alba.
Ajuga Genevensis.
— pyramidalis.
— reptans variegata.
— — alba.
Alchemilla alpina.
Alstrœmeria aurantiaca.
Alyssum saxatile compacta.
Androsace sarmentosa.
Anemone Japonica.
— — alba.
— Pennsylvanica.
— sylvestris.
Anthemis tinctoria.

— — alba.
Anthericum Liliago major.
Aquilegia Californica hybrida.
— Canadensis.
— chrysantha.
— glandulosa.
— Skinneri.
— vulgaris fl. pl.
— Sternbergia.
Armeria cephalotes.
— — rosea.
— formosa.
— maritima.
— — alba.
— plantaginea.
Artemisia Ludoviciana.
— Pontica.
Arundinaria variegata.
Arundo Donax.
— — variegata.
Aspidium Lonchitis.
— viridis.
Asplenium Trichomanes.
Aster alpinus.
— Amellus Bessarbicus.
— Belgica, Lady Trevelyn.
— Chapmanii.
— formosissima.
— Lindleyana.
— longifolia subsessilis.
— Novæ-Angliæ.
— — rubra.
— ptarmicoides.
Astrantia Carniolica.
Aubrietia Eyrei.
— Græca.
— violacea.
Auricula in variety.
Baptisia australis.
— leucophæa.
Barbarea vulgaris foliis variegatis.
Bellis perrenis.
Boltonia asteroides.
— glastifolia.
— grandiflora.
— latisquama.
Callirhoë involucrata.
Campanula Carpatica.
— glomerata Dahurica.
— Mariesii.
— media in variety.
— persicifolia.
— — alba.
— — — plena.
— rotundifolia.
— Scheuchzeri.
Cassia Marilandica.
Catananche cœrulea in variety.
Centaurea montana.
Chrysanthemum Golden Fleece.
Chrysosplenium oppositifolium.
Clematis Davidiana.
— paniculata.
— stans.
Coreopsis grandiflora.
— lanceolata.
— rosea.
— verticillata.
Cystopteris fragilis.
— regia.
Delphinium Belladona.
— Bicolor grandiflora.
— Copperie.
— densiflorum.
— Gen. Ulrich.
— Heinmanii.
— imbricatum cœlestinum.
— La Lorraine.
— Lord Mayor.
— Magnetine.
— magnificum.
— Sinensis in variety.
— — grandiflorum.
— — cœruleum.
— —album.
Desmodium penduliflorum.
Dianthus barbatus in variety.
— Caryophyllus in variety.
— Emperor.
— dentatus.
— Hispanicus.
— plumarius.
— — albus.
— — semperflorens.
Dicentra eximea.
— spectabilis.
Dictamnus Fraxinella.
— — alba.
Digitalis gloxinoides.
— — alba.
— — purpurea.
Doronicum Caucasicum.
— Clusii.
Echinops Ritro.
Elymus giganteus.
— glaucus.
Erigeron speciosum.
Erinus alpinus.
Eryngium amethystinum.
— purpureum.
Eulalia Japonica.
— — gracillima.
— — variegata.
— — zebrina.
Eupatorium Fraserii.
Euphorbia corollata.
— Myrsinites.
Funkia grandiflora.
— lanceolata.
— ovata.
— Sieboldii albo-marginata.
— undulata variegata.
Gaillardia grandiflora.
Geranium cinereum.
—maculatum plenum.
—platyphillum.
Geum miniatum.
Glechoma hederacea variegata.
Gypsophila paniculata.
Helenium autumnale.
— pumilum.
Helianthus decapetalus.
— Japonicus.
— laetiflorus.
— Maximilianus.
— mollis.

— — grandiflorus.
— multiflorus.
— — plenus.
— orgyalis.
— rigidus.
— — præcox.
— — semperflorens.
Heliopsis lævis.
– Pitcheriana.
Hemerocallis disticha fl. pl.
— flava.
— fulva.
— — plena.
— gramineus.
— Kwanso.
— — fl. pl.
— Muldendorfi.
— rutilans.
Heuchera sanguinea.
Hibiscus Californicus.
— incanus.
— militaris.
— Moscheutos albus.
— — Crimson Eye.
— roseus in variety.
Humulus Thunbergii.
Iberis cordifolia.
— semperflorens.
— sempervirens fl. pl.
Iris Caroliniana.
— cristata.
— cuprea.
— Germanica Mad. Chereau.
— Kœmpferii in variety.
— neglecta Fairy Queen.
— odoratissima.
— Olbiensis atrocœrulea.
— pumila.
— squallida.
— Siberica.
— — hematophylla.
— — orientalis.
— — plena.
— — sanguina.
— variegata Orpheon.
— — Apollon.
Lathyrus latifolius.
— — albus.
Lepachys pinnata.
Liatris scariosa.
— spicata.
Lilium auratum.
— — macranthum.
— — vittatum.
— — virginale alba.
— Batemanii.
— Colchicum Scovitzianum.
— Columbianum.
— concolor.
— cordifolium giganteum.
— coridion.
— elegans Alice Wilson.
— — fl. pl.
— — incomparable.
— — rubra plena.
— Hansonii.
— Japonicum odoratum.
— Kramerii.
— lancifolium.
— — album.
— — rubrum.
— Leichtlinii.
— — rubrum.
— longiflorum.
— — eximeum.
— — foliis marginatum.
— Martagon.
— superbum.
— tenuifolium.
— testaceum.
— tigrinum.
— — fl. pl.
— splendens.
Linum perenne.
Lobelia splendens in variety.
— syphilitica.
— — alba.
Lotus corniculatus.
Lychnis Chalcedonica.
— — alba.
— flos cuculi alba pl.
— vescaria fl. pl.
— vespertina fl. pl.
Malva alcea.
— — alba.
— moschata.
Melandrium Zawadskyi.
Mentha arvensis.
– piperita, Black Mitcham.
— — White Mitcham.
— viridis.
Monarda didyma.
— — alba.
— — coccinea.
— fistulosa.
Montbretia crocosmiflora.
Myosotis palustris semperflorens.
Nelumbium album grandiflorum.
— speciosum.
Nymphæa Breakleyi rosea.
— — candidissima.
— dentata.
— Devoniensis.
— gracilis.
— Laydeckeri rosea.
— Marliacea.
— — albida.
— — carnea.
— — chromatella.
— — rosea.
— rubra.
— odorata sulphurea.
— pygmæa.
— pygmæa helveola.
— Sturtevantii.
— Zanzibarensis.
— — azurea.
— — rosea.
— — superba.
Œnothera fruticosa magnifica.
— riparia.
— Youngii.
Opuntia Missouriensis.
Pæonias in variety.
Pachysandra terminalis.
Papaver nudicaule.

— — Royal Scarlet.
— — Salmon Queen.
— orientale.
— — bracteata.
— — immaculata.
— — Little Prince.
— — maxima.
— — Parkmanii.
— — Prince of Orange.
Pardanthus Chinensis.
Pentstemon barbatus Torreyii.
— diffusus.
— digitalis.
— lævigatus.
Phlox amoena.
— bifida.
— Carolina.
— ovata.
— paniculata.
— reptans.
— Stellaria.
— subulata.
— — alba.
— suffruticosa.
Phloxes, garden varieties.
— Adolph Wick.
— Alexander Von Humboldt.
— Andrew Keddie.
— Annie Vibert.
— Arago.
— Atlas.
— Auguste Rivière.
— Baron de Lassus.
— Beauty of Mindon.
— Beauty of Mirande.
— Beckey.
— Boule de Feu.
— Boule Hely.
— Boule de Neige.
— Bridesmaid.
— Burns.
— Caleope.
— Cameron.
— Carot.
— Charlemagne.
— Chimene.
— Clara.
— Claude de Jouffroy.
— Coccinea.
— Colonel Flatterer.
— Comedie.
— Compte de Brow.
— Croix de Honneur.
— Compte Lambertye.
— Crozy Fils.
— Cuirassé.
— De Fonvielle.
— De Lesseps.
— Delicatum.
— Dr. Crévaux.
— Earl of Rosslyn.
— Erato.
— Ernest Benary.
— Eugene Verdier.
— Figaro.
— Fraulein Steiner.
— Geanne de Arc.
— General Marguerite.
— George Sand.
— George Weyness.
— Glorie de Orleans.
— Gloria Victis.
— Henri Bryon.
— Henri Draison.
— Henry Liernae.
— Horace Vernet.
— Hyphinison.
— John Alexander.
— J. Stewart.
— Le Jeune Viala.
— Le Patriote.
— la Vagne.
— Ledarlur.
— Le Pole Nord.
— Liervalli.
— Lord Byron.
— Mad. Bardon.
— Madame de Massoncure.
— Madame de St. Pulgent.
— Madame H. Jacotot.
— Mad. J. Coste.
— Mad. Moisette.
— Mad. Prosper Sangiers.
— Mad. Randatler.
— Mad. Verlot.
— Mlle. de Roland.
— Mlle. Sousine.
— Margaretha.
— Miss Lingard.
— Mr. Arnold Tournier.
— Mrs. Arberdeen.
— Mrs. Elder.
— Mrs. Gardiner.
— Mrs. Goodwin.
— Mrs. James Anderson.
— Mrs. Laing.
— Mrs. Tennant.
— Mrs. Whitehead.
— Mons. Aubry.
— M. Graham.
— M. Guilbert.
— M. Oudin.
— Pelleton.
— Pierre Lierval.
— Pionnier.
— Princess of Wales.
— Princess Ghykze.
— Princess Louise.
— Princess Louise Lorne.
— Progress.
— Purple gem.
— Richard Wallace.
— Roi Marshall.
— Rubra splendida.
— Souvenir de Enfant.
— Souvenir de Nancy.
— St. Beauve.
— Talisman.
— Telephone.
— T. Granger.
— The Deacon.
— The Pearl.
— The Queen.
— Victor Hugo.
— Zebra.
Phyteuma Scheuchzerii.
Platycodon grandiflorus.

Plumbago Larpentæ.
Polemonium.
— coeruleum.
— — album.
— reptans.
— Richardsonii.
Polygonum amplexicaule.
— cuspidatum.
— — crispum.
— Sachalinense.
Pontederia crassipes.
Potentilla aurea.
— Glorie D' Nancy.
— Jane Salter.
— La Versuve.
— Wm. Robinson.
Poterium Canadensis.
Primula.
— auriculata.
— hirsuta.
— minima.
Pyrethrums.
— Ajax.
— Album plenum vanum.
— Apella.
— Aphrodite.
— Aquilla.
— Argentine.
— Aurora.
— Balventius.
— Bates.
— Beatrice.
— Bicolor grandiflora.
— Boecace.
— Bon Ami.
— Bridesmaid.
— Candidum plenum.
— Capt. Nares.
— Celia.
— Copperie.
— Delicatissinum.
— Densiflorum.
— Desse.
— Eugene.
— Flora.
— Galopin.
— Gazelle.
— Gaubanberg.
— Glen Ulrich.
— Gloire d'Italie.
— Glow Worm.
— Godiva.
— Golfatene.
— Grandiflora.
— Gustav Hertz.
— Heineman.
— Henry Hampton.
— Hymen.
— Imbricatum Cœlestinum.
— Lord Lansdowne.
— La Loraine.
— Lord Mayor.
— Madame Billard.
— Mad. Bouchalet.
— Mad. Path.
— Mademoiselle Benary.
— Magnetinene.
— Magnificum.
— Mammouth.
— Marquise of Buts.
— Massilia.
— Meanda.
— Medusa.
— Melton.
— Mester Reeve.
— Niveum plenum.
— Ochroleucum.
— Olivia.
— Peach.
— Penelope.
— Princess of Wales.
— Queen of May.
— Raphana.
— Roland.
— Roseum.
— Rosy Morn.
— Spectabile.
— Talina.
— Uliginosum.
— Uzziel.
— Vance.
— Van Lactii.
— White Rose.
— W. Krumpler.
Ramondia Pyrenaica.
— Serbica.
Ranunculus aconitifolius pl.
— amplexicaulis.
Rudbeckia maxima.
— Neumanii.
— speciosa.
— subtomentosa.
— triloba.
Ruellia ciliosa.
Sagittaria Montevidensis.
Salvia officinalis.
— pratensis.
Saxifraga Aizoon var. laeta.
— apiculata.
— cristata.
— cuneifolia.
— Hostii.
— Megasea Nelsonii.
— — crassifolia.
— — ciliata.
— — cordifolia.
— — — purpurea.
— sancta.
Scabiosa Caucasica.
Scirpus Tabernæmontanus.
Sedum Anacampseros.
— carneum.
— Fabiana.
— Maximowiczii.
— Rhodiola.
— Sieboldii.
— spectabile.
— — alba.
Sempervivum.
— angustifolium.
— arachnideum.
— patens.
Silene ciliata.
— Schafta.
Silphium perfoliatum.
Soldanella montana.

Spiræa Aruncus.
— astilboides.
— Filipendula.
— — pl.
— Japonica.
— — foliis variegatis.
— — grandiflora.
— lobata.
— palmata.
— — alba.
— — elegans.
— Ulmaria.
— — fl. pl.
— — foliis variegatis.
Statice latifolia.
Stellaria Holostea.
Stokesia cyanea.
Stylophorum diphyllum.
Tolmiea cardinalis.
Tradescantia pilosa.
— Virginica.
— — alba.
— — — major.
— — rosea.
Trifolium Pannonicum.
Tritoma Uvaria.
Trollius Europæus.
Tunica Saxifraga.
— cordata.
Verbascum Phœniceum.
Veronica longifolia subsessilis.
— rupestris.
— spicata.
— — alba.
— — variegata.
— Virginica.
Vinca major variegata.
Viola cucullata.
— — alba.
Yucca filamentosa.
— — variegata.

The Mexican Nursery Exhibit in the Midway Plaisance, so far as the Species or Trade Names were determinable.—(See Page 117.)

Adiantum sp.
Anthurium acaule.
— cordifolium.
— lancifolium.
— langifolium.
— pinnatifidum.
Aphelandra Liboniana.
Aralia denticulata.
Ardisia Mexicana.
Begonia nivea.
— punctata.
— ricinifolia.
— sanguinea.
— semperflorens.
Bæria ovellana.
Bescharneria yuccoides.
Briophyllum epilepticum.
Buddleia globosa.
Caffea Arabica.
Canna Indica.
Carica Papaya.
Cestrum coccineum.
Chinchona.
Cibotium nigrum.
— Schiedei.
Citrosma limoncillo.
Citrus Aurantium.
— — Mandarin.
— myrtifolia.
Cuphea Cavendishi.
Cupressus Benthamiana.
Dasylerion serratifolium.
Datura arborea.
Dioon edule.
Echeveria.
Felicia Mexicana.
Ficus angustifolia.
— Castilloa.
— eburnea.
Fuchsia longifolia.
Geonoma Verschaffeltii.
Guatteria sp.
Hæmatoxylon Campechianium.
Hibiscus Chinensis.
Inga pulcherrima.
Jambosa vulgaris.
Juglans Mexicana.
Juniperus Virginiana.
Justicia carnosa.
— labia.
— pictorea.
Lagerstrœmia Indica.
Ligustrum ovalifolium.
Macrozamia Mexicana.
Muraltia limonaria.
Musa zebrina.
Myrtus sp.
Pachira fastuosa.
Panax cordifolium.
Philodendron sp.
Phyllocactus sp.
Pinus leiophylla.
— religiosa.
Poinsettia pulcherrima.
Psidium Guadalupia.
— Guyava.
Pteris serrulata.
Quercus repanda.
Ribes campanulata.
— wild (Groselero sylvestre.)
Rivina humilis.
Sanchezia nobilis.
Sarsaparilla (Smilax.)
Senecio elegans.
Spiræa canescens?
— Reevesiana.
Swainsonia Osborni.
Tabernæmontana albiflora.
Tachira fatuosa.
Taxodium distichum.
Thuyopsis dolabrata.
Volkameria fragrans.

§ 3. DIRECTORY OF THE NATIONAL, STATE, PROVINCIAL AND OTHER MOST IMPORTANT HORTICULTURAL SOCIETIES IN NORTH AMERICA, 1893.

Alabama Horticultural Society:
Pres., Geo. I. Motz, Huntsville.
Sec., Frank Boykin, Seale.

American Association of Nurserymen:
Pres., U. B. Pearsall, Fort Scott, Kan.
Sec., Geo. C. Seager, Rochester, N. Y.

American Carnation Society:
Pres., E. G. Hill, Richmond, Ind.
Sec., C. J. Pennock, Kennet Square, Chester Co., Pa.

American Chrysanthemum Society:
Pres., Elijah A. Wood, West Newton, Mass.
Sec., Elmer D. Smith, Adrian, Mich.

American Cranberry Growers' Association:
Pres., J. H. Brakeley, Bordentown, N. J.
Sec. and Treas., A. J. Rider, Trenton, N. J.

American Horticultural Society:
Pres., Parker Earle, Ocean Springs, Miss.
Sec., E. A. Popenoe, Manhattan, Kan.

American Pomological Society:
Pres., P. J. Berckmans, Augusta, Ga.
Sec., G. C. Brackett, Lawrence, Kan.

American Seed Trade Association:
Pres., W. Atlee Burpee, Philadelphia, Pa.
Sec. and Treas., A. L. Don, New York.

American: See also Association of American Cemetery Superintendents; Society American Florists.

ARIZONA—

Maricopa Horticultural Society:
Pres., J. E. Price, Tempe.
Sec., W. H. Winters, Tempe.

Arkansas Horticultural Society:
Pres., W. G. Vincinheller, Little Rock.
Sec., H. Strother, Fort Smith.

Association of American Cemetery Superintendents:
Pres., Wm. Salway, Cincinnati.
Sec., Frank Eurich, Toledo, Ohio.

British Columbia Fruit Growers' Association:

Pres., John Kirkland, Ladner's Landing.
Sec., A. H. B. MacGowan, Vancouver.

CALIFORNIA—

California Board of State Viticultural Commissioners:

Pres., John P. Doyle, Menlo Park.
Sec., Winfield Scott, San Francisco.

California Fruit Union:

Pres., J. Z. Anderson, San Francisco.
Vice Pres. and Sec., L. W. Buck, San Francisco.

California Olive Growers' Association:

Pres., Ellwood Cooper, Santa Barbara.
Sec., B. M. Lelong, San Francisco.

California State Board of Horticulture:

Pres., Ellwood Cooper, Santa Barbara.
Sec., B. M. Lelong, San Francisco.

California State Floral Society:

Pres., E. J. Wickson, Berkeley.
Sec., A. S. Aiken, Berkeley.

California State Horticultural Society.

Pres., B. M. Lelong, San Francisco.
Sec., E. J. Wickson, Berkeley.

California State Coöperative Raisin and Fruit Growers' Exchange:

Pres., ——
Sec., W. Harvey, Fresno.

Fruit Association:

Pres., James A. Webster, Vacaville.
Sec., T. H. Buckingham, Vacaville.

Pomological Society of Southern California:

Pres., N. Blanchard, Riverside.
Sec., D. Edson Smith, Santa Ana.

Cider Makers' Association of the Northwest:

Pres., L. R. Bryant, Princeton, Ill.
Sec., Chas. C. Bell, Boonville, Mo.

Colorado Horticultural Society:

Pres., C. S. Faurot, Boulder.
Sec., Alexander Shaw, Denver.

Colorado State Board of Horticulture:

Pres., W. B. Osborn, Loveland.
Sec., John Tobias, Denver.

Connecticut. No State Society.

Delaware. No State Society. See Peninsula Hort. Soc.

Eastern Nurserymen's Association:

Pres., W. C. Barry, Rochester, N. Y.
Sec., William Pitkin, Rochester, N. Y.

FLORIDA—

Florida Fruit Exchange:

Pres., G. R. Fairbanks, Jacksonville.
Sec., M. P. Turner, Jacksonville.

Florida Horticultural Society

Pres., Dudley W. Adams, Tangierine.
Sec., E. O. Painter, De Land.

Georgia Horticultural Society:

Pres., P. J. Berckmans, Augusta.
Sec., T. L. Kinsey, Savannah.

ILLINOIS—

Illinois Horticultural Society:

Pres., H. Augustine, Normal.
Sec., H. M. Dunlap, Savoy.

Horticultural Society of Northern Illinois:

Pres., O. W. Barnard, Manteno.
Sec., J. L. Hartwell, Dixon.

Horticultural Society of Southern Illinois:

Pres., R. T. Fry, Olney.
Sec., E. G. Mendenhall, Kinmudy.

INDIANA—

Indiana Horticultural Society:

Pres., C. M. Hobbs, Bridgeport.
Sec., W. H. Ragan, Greencastle.

Society of Indiana Florists:

Pres., M. A Hunt, Terra Haute.
Sec., Wm. G. Bertermann, Indianapolis.

IOWA—

Iowa State Horticultural Society:

Pres., Eugene Secor, Forest City.
Sec., Geo. Van Houten, Lenox.

Northwestern Iowa Horticultural Society:

Pres., M. E. Hinkley, Marcus.
Sec., M. B. Chapman, Correctionville.

Southeastern Iowa Horticultural Society:

Pres., C. L. Watrous, Des Moines.
Sec., C. W. Burton, Cedar Rapids.

Kansas Horticultural Society:

Pres., L. Houk, Hutchinson.
Sec., G. C. Brackett, Lawrence.

Kentucky Horticultural Society:

Pres., A. P. Farnsley, Louisville.
Sec., John C. Hawes, Louisville.

Louisiana. No State Society:

Maine State Pomological Society:

Pres., Chas. S. Pope, Manchester.
Sec., D. H. Knowlton, Farmington.

Maryland. No Society. See Peninsula Hort. Soc.

MASSACHUSETTS—

Cape Cod Cranberry Growers' Association:

Pres., J. J. Russel, Plymouth.
Sec. and Treas., Franklin Crocker, Hyannis.

Massachusetts Horticultural Society:

Pres., Nathaniel T. Kidder, Milton.
Sec., Robert Manning, Horticultural Hall, Boston.

MICHIGAN—

State Horticultural Society:

Pres., T. T. Lyon, South Haven.
Sec., Edwy C. Reid, Allegan.

West Michigan Horticultural Society:
Pres., Mr. Wiley, Saugatuck.
Sec., Mr. Whitney, Muskegon.

MINNESOTA—

Minnesota Horticultural Society:
Pres., Wyman Elliott, Minneapolis.
Sec., A. W. Latham, Excelsior.

Society of Minnesota Florists:
Pres., E. Nagel, Minneapolis.
Sec., R. Wessling, Minneapolis.

Mississippi Horticultural Society:
Pres., H. E. McKay, Madison Station.
Sec., W. H. Cassell, Canton.

Missouri State Horticultural Society:
Pres., J. C. Evans, Harlem.
Sec., L. A. Goodman, Westport.

South Missouri Horticultural Association:
Pres., H. D. Mackay, Olden.
Sec., J. T. Snodgrass, West Plains.

Montana. No Society.

Montreal Horticultural Society:
Pres., John Doyle, Montreal.
Cor. Sec., Thomas Williamson, Montreal.

Nebraska Horticultural Society:
Pres., F. W. Taylor, Lincoln.
Sec., G. J. Carpenter, Fairbury.

Nevada. No Society.

New Hampshire. No Society.

New Jersey Horticultural Society:
Pres., Ira J. Blackwell, Titusville.
Sec., Wm. R. Ward, Newark.

New Mexico Horticultural Society:
Pres., Arthur Boyle, Santa Fé.
Sec., Geo. H. Cross, Santa Fé.

NEW YORK—

New York Fruit Exchange:
Pres., E. Ruhlman, New York City.
Sec., William Rose, New York City.

New York Horticultural Society: Non-active.

Western New York Horticultural Society:
Pres. W. C. Barry, Rochester.
Sec., John Hall, Rochester.

North Carolina Horticultural Society:
Pres., J. Van Lindley, Pomona.
Sec., S. Otho Wilson, Raleigh.

North Dakota. No Society.

Nova Scotia Fruit Growers' Association:
Pres., J. W. Bigelow, Wolfville.
Sec., S. C. Parker, Benvick.

Ohio Horticultural Society.
Pres., Geo. W. Campbell, Delaware.
Sec., W. W. Farnsworth, Waterville.

Ontario Fruit Growers' Association:
Pres., A. H. Pettit, Grimsby.
Sec., L. Woolverton, Grimsby.

OREGON—

Oregon Horticultural Society:
Pres., J. R. Cardwell, Portland.
Sec., E. R. Lake, Portland.

Oregon Pomological Society:
Pres., E. P. Roberts, The Dalles.
Sec., J. A. Varney, The Dalles.

Oregon State Board of Horticulture:
Pres., J. R. Cardwell, Portland.
Sec., Ethan W. Allen, Portland.

Peninsular Horticultural Society:
Pres., George Biddle, Cecilton, Md.
Sec., Wesley Webb, Dover, Del.

PENNSYLVANIA—

Pennsylvania Horticultural Society.
Pres., George W. Childs, Philadelphia.
Sec., D. D. L. Farson, Philadelphia.

Pennsylvania State Horticultural Association:
Pres. W H. Moon, Morrisville.
Sec., E. B. Engle, Waynesboro.

Rhode Island Horticultural Society:
Pres., John G. Massie, Providence.
Sec., Chas. W. Smith, Providence.

Society of American Florists:
Pres., J. T. Anthony, Chicago.
Sec., W. J. Stewart, Boston, Mass.

South Carolina Horticultural Society:
Pres., H. B. Buist, Greenville.
Sec., G. Wanner, Walhalla.

South Dakota Horticultural Society:
Pres., H. C. Warner, Forestburg.
Sec., E. D. Cowles, Vermilion.

Tennessee—West Tennessee Horticultural Society:
Pres., J. C. Tharp, Gibson.
Sec., A. A. Cawdery, Gadsden.

TEXAS—

Texas State Horticultural Society:
Pres., J. C. Newberry, Pilot Point.
Sec., E. L. Huffman, Waxahachie.

Texas State Nurserymen's Association:
Pres., E. W. Kirkpatrick, McKinney.
Sec., J. M. Howell, Dallas.

Utah. No Society.

Vermont. No Society.

Virginia Pomological Society. Non-active. See Peninsula Hort. Soc.

WASHINGTON—

State Board of Horticulture:
Pres., Henry Bucey, Tacoma.
Sec., C. A. Tonneson, Tacoma.

Washington Horticultural Society:
Pres., Henry Bucey, Tacoma.
Sec., A. N. Miller, Puyallup.

West Virginia. No Society.

Western Nurserymen's Association:
Pres., G. J. Carpenter, Fairbury, Neb.
Sec., J. W. Schoette, St. Louis, Mo.

WISCONSIN—

Wisconsin Horticultural Society:
Pres., M. A. Thayer, Sparta.
Sec., B. S. Hoxie, Evansville.

Wisconsin State Cranberry Growers' Association:
Pres., W. S. Braddock, Mather.
Sec. and Treas., J. H. Treat, Meadow Valley.

Wyoming. No Society.

§ 4. DIRECTORY OF HORTICULTURISTS, OR THOSE IN CHARGE OF HORTICULTURAL WORK, OF EXPERIMENT STATIONS IN NORTH AMERICA, 1893.

Alabama (Central Station):
- **P. H. Mell, M. E., Ph. D., Auburn, Botanist and Meteorologist.**

Alabama (Canebrake Station):
- **B. M. Duggar, M. S., Uniontown, Asst. Director in charge.**

Arizona:
- **Mark Walker, Tucson, Asst. Horticulturist.**

Arkansas:
- **J. T. Stinson, B. S., Fayetteville, Horticulturist.**

California:
- **E. J. Wickson, A. M., Berkeley, Supt. of Grounds.**
- **L. Paparelli, Lic. Agr., Berkeley, Asst. in charge of Viticulture and Olive Culture.**
- **Emil Kellner, Berkeley, Foreman of Grounds.**

Canada (Agricultural College):
- **R. L. Hutt, Guelph, Horticulturist.**

Canada (Central Experimental Farm):
- **John Craig, Ottawa, Horticulturist.**

Canada, Manitoba Experimental Farm:
- **S. A. Bedford, Brandon, Superintendent.**

Colorado:
- **C. S. Crandall, M. S., Fort Collins, Botanist and Horticulturist.**

Connecticut (State Station):
- **W. C. Sturgis, Ph. D., New Haven, Mycologist.**

Delaware:
- **M. H. Beckwith, Newark, Horticulturist and Entomologist.**

Florida:
- **J. N. Whitner, M. A., Lake City, Horticulturist.**

Georgia:
- **R. J. Redding, Experiment, Director.**

Idaho.
- **Rob't Milliken, Moscow, Director.**

Illinois:
- **Thomas J. Burrill, Ph. D., Champaign, Horticulturist and Botanist.**

Indiana:
James Troop, M. S., LaFayette, Horticulturist.

Iowa:
J. L. Budd, M. H., Ames, Horticulturist.

Kansas:
Edward A. Popenoe, A. M., Manhattan, Horticulturist.

Kentucky:
C. W. Mathews, B. S., Lexington, Horticulturist.

Louisiana:
H. A. Morgan, B. S. A., Baton Rouge, Entomologist and Horticulturist.

Maine:
W. M. Munson, M. S., Orono, Horticulturist.

Maryland:
J. S. Robinson, College Park, Horticulturist.

Massachusetts (Hatch Station):
Samuel T. Maynard, B. S., Amherst, Horticulturist.

Michigan:
L. R. Taft, M. S., Agricultural College P. O., Horticulturist.

Minnesota:
Samuel B. Green, B. S., St. Anthony Park, Horticulturist.

Mississippi:
A. B. McKay, B. S., Agricultural College P. O., Horticulturist.

Missouri:
Charles A. Keffer, M. A., Columbia, Horticulturist.

Montana:
Luther Foster, Bozeman, Acting Director.

Nebraska:
Fred W. Card, M. S., Lincoln, Horticulturist.

Nevada:
R. H. McDowell, B. S., Reno, Agriculturist and Horticulturist.

New Hampshire:
G. H. Whitcher, B. S., Durham, Director.

New Jersey:
Byron D. Halstead, Sc. D., New Brunswick, Botanist and Horticulturist.

New Mexico:
A. E. Blount, A. M., Las Cruces, Agriculturist and Horticulturist.

New York (Cornell):
L. H. Bailey, M. S., Ithaca, Horticulturist.
E. G. Lodeman, Asst. Horticulturist.

New York (State):
S. A. Beach, B. S., Botanist and Horticulturist.

North Carolina:
W. F. Massey, C. E., Raleigh, Horticulturist.

North Dakota:
C. B. Waldron, B. S., Fargo, Arboriculturist.

Ohio:
W. J. Green, Wooster, Horticulturist.

Oklahoma:
F. A. Waugh, B. S., Stillwater, Horticulturist.

Oregon:
George Coote, Corvallis, Horticulturist.

Pennsylvania:
George C. Butz, M. S., State College, Centre Co., Horticulturist.

Rhode Island:
L. F. Kinney, B. S., Kingston, Horticulturist.

South Carolina:
J. S. Newman, Fort Hill, Director.

South Dakota:
L. C. Corbett, B. S., Brookings, Horticulturist.

Tennessee:
R. L. Watts, B. Ag., Knoxville, Horticulturist.

Texas:
R. H. Price, B. S., College Station, Horticulturist.

Utah:
E. S. Richman, M. S. A., Logan, Horticulturist and Entomologist.

Vermont:
L. R. Jones, A. B., Burlington, Botanist.

Virginia:
W. B. Alwood, Blacksburg, Botanist and Entomologist.

Washington:
E. R. Lake, M. S., Pullman, Botanist and Horticulturist.

West Virginia:
F. W. Rane, Morgantown, Horticulturist.

Wisconsin:
Emmett S. Goff, Madison, Horticulturist.

Wyoming:
B. C. Buffum, B. S., Laramie, Horticulturist.

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